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CONTENT

FOREST LAND-COVER CHANGES 2012-2018 IN HUNTING GROUNDS IN VOJVODINA

Vladimir Marković[1], Milosava Matejević[2], Milutin Kovačević[3], Zoran Ristić[4], Lukrecija Đeri[5], Igor Ponjiger[6]

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ABSTRACT

Deforestation could influence land cover ecological significance in hunting grounds on a big scale. This research examines changes of forest and shrub patches in the Vojvodina region by a set of landscape metrics. The study area includes 154 hunting grounds from which hunting organizations are managing with 134 hunting grounds, PC "Vojvodinasume" with 17, Serbian Armed Forces with two, and National Park "Fruska gora" with one hunting ground. The results show that in the National Park and Serbian Armed Forces hunting grounds the broad-leaved forest areas occurred on the surfaces that were under the transitional woodland-shrub and vice versa. A similar situation is in the hunting grounds managed by PC ''Vojvodinasume" where there is not only the most intensive logging of broad-leaved and coniferous forests but also the most intensive afforestation of mixed forests and transitional woodland-shrub. On the other hand, in the hunting grounds managed by hunting organizations, there is the highest area growth under the broad-leaved forest.

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Introduction

Permanent logging was typical in the industrialized world until a few decades ago. Vast areas under forest worldwide were clear cut for industrial expansion, economic development, or agriculture. Today deforestation is occurring on a large scale not only in tropical countries in Africa, Asia, and Latin America (Steininger et al., 2001; Chowdhury, 2006) but also in taiga regions, like in Russia or Canada (Tracy, 1994). One of the main problems in forest policies stems from the fact that there are not enough adequate and proper forestation monitoring (Dale, 2008; Monteiro, Souza, 2012). What's more, illegal logging and corrupt activities lead to forest decline worldwide (Brack, 2003; Markus-Johansson et al., 2010). The legislative framework for sustainable development, in agriculture and generally defines the rights to a healthy environment, and the duty to protect and improve the environment in accordance with the law (Tomaš Simin et al., 2019). What's more, the effect of the greenhouse is related to the increase of CO2 in the atmosphere, and one of the biggest polluters is changes in the use of land and forest – logging (Počuča et al., 2017).

Although the Environmental Performance Index (EPI) of the forest category in Serbia is above the average score of the top 16 European countries (Radivojević et al., 2019) there are still big challenges related to forestry, especially in Vojvodina province. In Serbia, about 30% of the total area is under forest (Jovanović, Milanović, 2015; Vukajlović et al., 2017) while the Vojvodina province – Northern Serbia is one the least forest area in Europe with only 6% under forest (Marković et al., 2017; Statistical Office of the Republic of Serbia, 2017). The diversity of natural conditions has resulted in the fact that the Vojvodina region is a typical agricultural region with pronounced urban areas. It is characterized by vast areas of arable land with crops. Besides the agriculture land, there are also areas under steppe, ponds, wetlands, and forests which are favorable habitats for diverse wildlife species as well (Marković et al., 2017).

Vojvodina Province was the pioneer and nowadays is still the leading region in Serbia in game and habitat management activity and protection (Ristić et al., 2009). Although game habitat is widely influenced by a range of biogeographical factors (Torres et al., 2011), recent researches have determined that available food (Virgós, Tellériа, 1998) and land cover (Mysterud, Østbye, 1999; Borkowski, 2004; Borkowski, Ukalska 2008; Melis et al., 2009) are two essential factors. Furthermore, forest area is important in the form of the following components: as a food supplier, as a shelter provider, as the creator and regulator of the micro-climate of the habitat, etc. Whether it is a big or small game, vegetation plays an extremely important role in the survival of game in the hunting ground. Whether it is referred to as hunting or wildlife management, there is a conflict with the forest industry because of both wood production and wildlife management overlap in forests. Wildlife and forestry management practices had to evolve from the exploitation of natural resources to tools for sustainable management and at the same time to avoid losses in wood production, game, or biodiversity.

All this indicates that forest management and determination of hunting capacity on which is being based is an important and responsible job on which hunting management is based. Given the importance of forest preservation an attempt was made to use Coordination of Information on the Environment (CORINE) Land Cover (CLC) in regional forest management in hunting grounds. Landscape elements are changing over time and the history of studying spatial changes through remote sensing begins with the launch of the first satellites for Earth observation in the second half of the 1960s. Methods and techniques for monitoring and analyzing spatial changes have evolved, and fast-growing interest in this topic is caused by the increasing attention and interests to the effects of global climate and anthropogenic changes (Théau, 2012). Spatial changes can most easily be observed by analyzing one of the land cover databases. Remote sensing and Geographic Information System (GIS) are the best methods to study spatial distribution related to land-cover and land-use changes (Popovici et al., 2013). Land cover changes are manifested as conversion which is presented as radical changes involving the replacement of one type of land cover by another, or modification which considers maintaining a certain type of intensive use without changing the terrain's attributes (Meyer, Turner, 1994; Gregorio, Jansen, 2000). For this research, we had in view to identify and analyze both category of changes in forest land cover. Nowadays, land cover change is generated principally by human activity for some individual or societal needs (Gavrilidis et al., 2015; Ianas, Germain, 2018). Landscape metrics can be used to compare the same landscapes within different periods. It is one of the most common analyses in geographical or landscape ecological researches (Klaučo et al., 2012). According to McGarigal and Marks (1994), Gustafson (1998), Forman (2006), and Gergel and Turner (2017) each land cover is possible to measure by landscape metrics for size, density, shape, edge, and diversity. The main aim of this paper is to analyze forestation changes as the number of patches (NP), class area (CA), and mean patch size (MPS) in period 2012-2018 in four different hunting ground types, using CLC which is an efficient tool for classification and estimation of land cover, and to improve hunting ground forest management in Vojvodina region as one of the least forested areas in Europe.

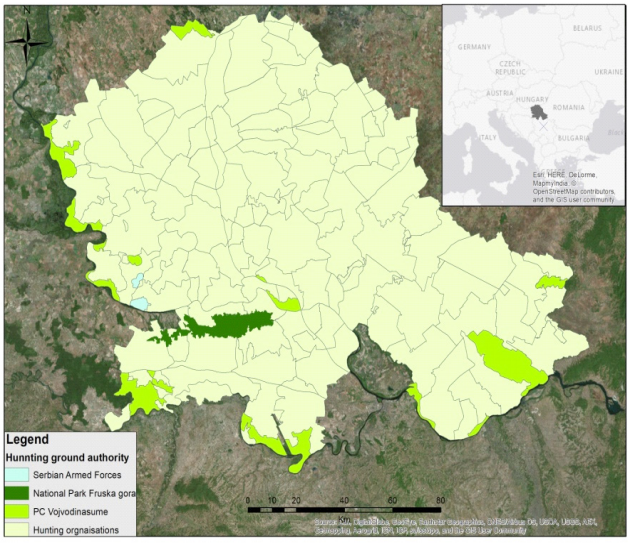
Corine Land Cover is in official use in the EU countries (Jovanović et al., 2018). It is a European program launched by the European Commission in 1985 based on the interpretation of satellite images to gather information related to the environment such as soil, water, land cover, biotopes, and so on (Neumann et al., 2007). Contrary to Normalized Difference Vegetation Indices (NDVI), a CLC has a broader scope and recognizes five groups: artificial surfaces, agricultural areas, forest and semi-natural areas, wetlands, and water bodies. It consists of an inventory of land cover in 44 classes. CORINE Land Cover is implemented in 5 to 10 year periods. This fits rather well with the observed CLC Change dynamics, which is below 1% change per year for almost all countries, except Portugal (Büttner et al., 2010). The main benefits of the change-mapping are direct interpretation and all changes larger than 5 ha can be easily delineated regardless of their geometric position.

This research includes a combination of the use of publically available geographical data, geographical information systems, and landscape metrics in four different managing authorities of hunting grounds such as Public Company "Vojvodinasume", Serbian Armed Forces, National Park "Fruska gora" and Hunting organizations to analyze CLC changes in period 2012-2018. For purposes of this research, we have analyzed forest and semi-natural areas (land cover patches) where was detected broad-leaved forest, coniferous forest, mixed forest, natural grasslands, and transitional woodland-shrub.

Materials and methods

Study area - The Vojvodina region is situated in the northern part of Serbia and is a part of the Pannonia Basin. The study area includes 154 hunting grounds (Fig. 1) from which Hunting organizations are managing with 134 hunting grounds (all hunting ground are open), PC "Vojvodinasume" with 17 (14 hunting grounds are fenced and 3 are semi fenced), Serbian Armed Forces with two (one open and one fenced) and National Park "Fruska gora" with one hunting ground (open hunting ground). Hunting organizations in Vojvodina own the largest agriculture land since Vojvodina is a lowland region with the highest agriculture surface in Serbia with low forest coverage. All hunting grounds in Vojvodina encompass 2,158,012 ha. Vojvodina stands out as a region in Serbia with the highest number of hunting grounds, since it covers around one-quarter of the territory of Serbia and it gathers around one-half of all hunting grounds in the country. This is due to the fragmentation of hunting grounds which occurred recently in Vojvodina to establish new hunting regions (Lavadinović, 2016).

Figure 1. Hunting grounds in Vojvodina province



Source: authors

The major part of forests and forestland in the Vojvodina region are located in fenced hunting grounds where forest activities are the most intensive. National forest inventory in Serbia has been performed very rarely (approximately every 20 years) in the past. Since 2007 official estimates of the forest inventory have been made every year. The data for this research were downloaded from the Copernicus platform (https://land.copernicus.eu/) in the form of a Corine Land Cover (CLC) database. CLC inventory was initiated in 1985. Updates have been produced in 2000, 2006, 2012, and 2018 so it is even possible to compare with official estimates of the forest inventory. CLC uses a Minimum Mapping Unit (MMU) of 25 hectares (ha) for areal phenomena and a minimum width of 100 m for linear phenomena. The time series are complemented by change layers, which highlight changes in land cover with an MMU of 5 ha (EEA, 2007). CLC dates are obtained using satellite image processing, GIS integration, and generalization. For the CLC Change dynamics, satellite data were obtained from IRS P6 LISS III and Rapid Eye dual date for the year 2012, and Sentinel-2 and Landsat-8 for gap filling for the year 2018 with thematic accuracy ≥ 85%. GIS is becoming a powerful tool not only in geographic sciences but also in environment data processing such as game habitat conditions. For this research, all analysis has been facilitated by the ArcGIS 9.e software by ESRI to produce thematic maps for a more visual description of parameters' size, distribution, and correlation. Maps were made in WGS_1984_UTM_Zone_34N Projected Coordinate System, D_WGS_1984 Datum, with Prime Meridian Greenwich. The obtained information allowed us to assess changes in space-and-time and to identify the types of change during the observed period.

Results and discussion

After data processing, it was determined that all hunting grounds in Vojvodina encompass 2,158,012 ha what is almost the whole territory of Vojvodina province - 2,161,551 ha (Statistical Office of the Republic of Serbia, 2017). The forest area encompassed 135,871 ha in 2012 (6.29% of the total territory) and 134,697 ha in 2018 (6.23% of the total territory) (Table 1). When these CLC results are compared with official estimations of the National forest inventory or PC "Vojvodinasume" there is a small difference. For instance, according to the National forest inventory (Statistical Office of the Republic of Serbia, 2017) the forest area was smaller and encompassed 123,811 ha in 2014 (5.72% of the total territory), and 131,452 in 2017 (6.08% of the total territory). On the other hand, according to estimates of the PC "Vojvodinasume" total forest area was higher than CLC and was 140,717 (6.51%).

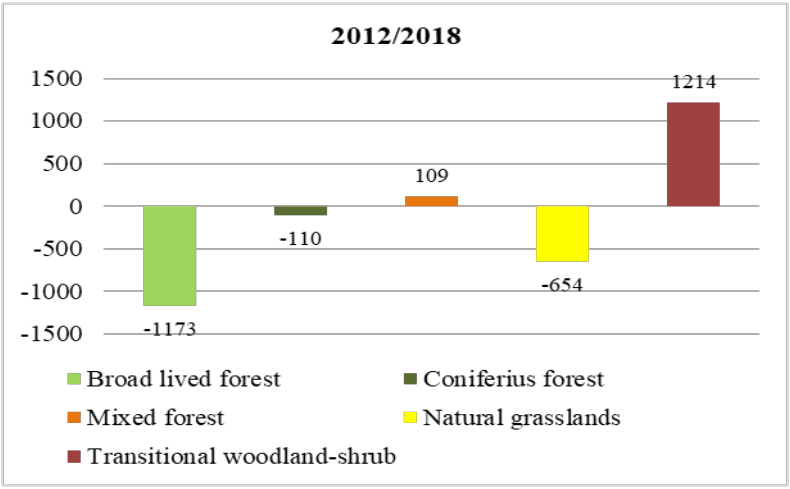
Table 1. Forest and shrub detection changes in Vojvodina

Land cover/Landscape metric	2012		2018	
	ha	NP	ha	NP
Broad leaved forest - 311	128479	442	127306	436
Coniferous forest-312	2344	31	2234	29
Mixed forest-313	5048	66	5157	69
Natural grasslands-321	40372	99	39718	101
Transitional woodland-shrub-324	57578	621	58792	634

Source: authors' calculations/Legend: NP- Number of patches

In the observed period, broad-leaved forests and shrub and herbaceous vegetation associations registered major changes. Looking at the change detection (Figure 2) the most frequent land cover flows were deforestation and afforestation.

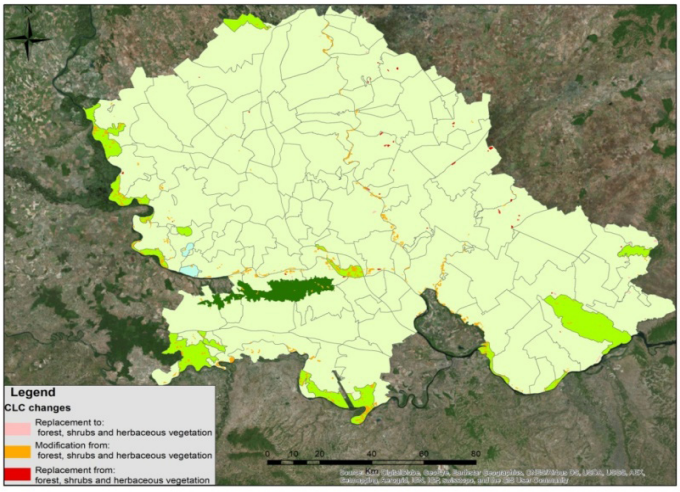
Figure 2. Forest changes 2012-2018 in hunting grounds



Source: authors' calculations

We used CLC change 2012-2018 seamless vector data to the created map. For this research purpose, we divided all changes into three groups: replacement from all other CLC classes to forests, shrubs, and herbaceous vegetation; modification among forests, shrubs, and herbaceous vegetation classes and replacement from forests, shrubs, and herbaceous vegetation to any other CLC class (Figure 3).

Figure 3. CLC changes map 2012-2018



Source: authors

After, when the CLC change was applied into four different hunting grounds types following results became apparent as shown (Table 2 - 5).

Table 2. CLC changes in PC "Vojvodinasume"

Land cover/Landscape metric	NP		CA (ha)		MPS (ha)	
Broad leaved forest - 311	-	78	-	1640	+	4.71
Coniferous forest - 312	-	4	-	117	-	13.66
Mixed forest - 313	+	3	+	109	+	1.65
Transitional woodland-shrub-324	+	82	+	1692	-	5.03

Source: authors' calculations
Legend: NP-Number of patches; CA-Class area; MPS-Mean patch size

Table 3. CLC changes in Hunting organization

Land cover/Landscape metric	NP		CA (ha)		MPS (ha)	
Broad leaved forest - 311	-	51	+	254	+	9.91
Natural grasslands - 321	-	27	-	443	-	16.40
Transitional woodland-shrub - 324	+	56	+	45	-	7.85

Source: authors' calculations

T**able 4.** CLC changes in Serbian Armed Forces

Land cover/Landscape metric	NP		CA (ha)		MPS (ha)	
Broad leaved forest - 311	-	3	-	98	-	32.66
Transitional woodland-shrub - 324	+	3	+	98	+	32.66

Source: authors' calculations

Table 5. CLC changes in National Park Fruska gora

Land cover/Landscape metric	NP		CA (ha)		MPS (ha)	
Broad leaved forest - 311	-	4	+	146	+	28.49
Transitional woodland-shrub -324	+	4	-	146	-	28.49

Source: authors' calculations
Legend: NP- Number of patches; CA-Class area; MPS-Mean patch size

Results obtained through the application of CLC reveal different levels of land cover changes in investigated hunting grounds. The broad-leaved forest areas obtained using CLC changes 2012-2018 (Class 311) shrank by 1640 ha in hunting grounds managed by PC "Vojvodinasume" and Serbian Armed Forces (for 98 ha). On the other hand, the broad-leaved forest areas have increased in hunting grounds managed by National Park "Fruska gora" (for 146 ha) and hunting organizations (for 254 ha). Changes in coniferous (Class 312) and mixed forests (Class 313) were recorded only in hunting grounds managed by PC "Vojvodinasume" where the area under coniferous forests declined for 117 ha and increased for 109 ha in the case of mixed forests. Natural

grasslands area (Class 321) shrank by 443 ha and has been recorded only in hunting ground by hunting organizations. Regarding transitional woodland-shrub (Class 324), there is a growth in hunting grounds managed by PC "Vojvodinasume" (for 1692 ha), Serbian Armed Forces (for 98 ha), and Hunting organizations (for 45 ha) while in hunting ground managed by National Park Fruska gora area declined for 146 ha.

The number of patches (NP) changes has the same trend in every class in every hunting area where have been recorded. There were less broad-leaved forest, coniferous forest, and natural grasslands NP, while in mixed forest and transitional woodland-shrub the NP has an increase in the observed period. From the number of patches and their area, it is possible to determine the mean patch size (MPS). Output values from MPS changes indicate that following land cover patches vary in size regardless of class type but not to hunting ground authority. The relatively small difference in MPS changes between the classes among the different hunting ground types, compared to the higher difference in their surface, indicate that the hunting grounds by hunting organizations are the most fragmented, contrary to other types. As the forested area began shrinking, the quality of land as game habitat started deteriorating significantly.

Habitat evaluation is a complex indicator of vital conditions for certain species of game. It requires a realistic assessment of habitat conditions in the hunting ground, knowledge of the ecology of the game, and professional planning. Assessment of habitat conditions in the hunting ground also relates to the presence of natural food sources (pastures, fruiting shrubs, and trees, etc.) and natural shelters (for rest, protection of youngling). Regarding the game species management, land cover changes should strive to land cover fragmentation instead of land cover unification. In this case, there are three different scenarios. The most desirable is if NP and CA increase and MPS decrease. An unfavorable scenario is if NP and CA decrease and MPS increase. All other combination of NP, CA, and MPS changes it doesn't influence on fragmentation or merging to great extent. Regarding the abovementioned importance of fragmentation in terms of forest land cover types, it could be concluded that the optimal scenario is presented in transitional woodland-shrub (Class 324) in hunting grounds managed by PC ''Vojvodinasume" where NP is greater for 82 patches, CA for 1692 ha and MPS is lesser for 5.03 ha. The same situation but to a smaller extent is the same class (Class 324) in hunting ground managed by hunting organization where NP is greater for 56 patches, CA for 45 ha and MPS is lesser for 7.85 ha. On the other hand, the most unfavorable case is also in hunting grounds managed by PC ''Vojvodinasume'', in the broad-leaved forest (Class 311) where NP is lesser for 78 patches, CA for 1640 ha and MPS is higher for 4.71 ha.

Conclusions

Despite certain shortcomings that are reflected in rarely update (every five to ten years) and the fact that CLC is a predominantly regional database and to a certain extent is imprecise (CLC doesn't go under 5 ha) it surpasses old forest inventory techniques. Through our analysis, it became evident that CLC change in GIS could be an efficient tool in forest management overview in the Vojvodina region. GIS-based assessment

of land-cover changes over the observed period, according to the CLC database, highlighted a wide range of modifications in the land-cover pattern, basically transition from one category of use to another.

The results show that in the National Park and Serbian Armed Forces hunting grounds the broad-leaved forest areas occurred on the surfaces that were under the transitional woodland-shrub and vice versa. A similar situation is in the hunting grounds managed by PC ''Vojvodinasume'' where there is not only the most intensive logging of broad-leaved and coniferous forests but also the most intensive afforestation of mixed forests and transitional woodland-shrub. In the above mention, three types of hunting grounds the ratio logging-planting is almost equal. This indicates artificial reforestation i.e. planting after logging or establishment of new forest on degraded lands. Usually, for Public Companies like ''Vojvodinasume'' or National Park, as well as for the Military, the greatest threats result from activities of using natural resources such as forestry practices and activities. On the other hand, in the hunting grounds managed by hunting organizations, there is the highest area growth under the broad-leaved forest. The increase in forests can be explained by increased awareness of their importance for wildlife.

As a result of initiatives by the Provincial Government and local authorities, the changes in the study area have been characterized by the very low growth of forest landscapes or even shrinkage in some pilot areas, which's aimed to increase the forestation level of the area and to revitalize degraded sites.

CLC changes are very useful in countries like Serbia that rarely conduct national forest inventories, especially when the investigated area is one of the least forested areas in Europe. This methodology is very cheap and quick, easy to implement, and gives to government, ministries, forest managers in hunting grounds, and all other stakeholders very useful information which can help in the development of forest policies and possible issues in forest management. Incentives to good forestry practice must find their place in the forestry and agricultural policy measures.

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IMPACT OF SERVICE QUALITY ON SATISFACTION AND LOYALTY OF TOURISTS IN RURAL TOURISM OF ŠUMADIJA AND WESTERN SERBIA

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ABSTRACT

The issue of rural tourism service quality does not retain a sufficiently important place in the existing domestic and foreign literature. The purpose of this research in service quality, which is an important initiator of tourist satisfaction and loyalty in rural tourism. The survey was conducted at the beginning of 2020 using a questionnaire-based survey method to 299 respondents. With the purpose of checking the impact of the service quality on the satisfaction and loyalty of tourists in rural tourism of Šumadija and Western Serbia, an analysis was performed using SEM - Structural Equation Modeling. The survey results point there is a direct correlation between service quality and satisfaction, and as well between loyalty and satisfaction. Between service quality and loyalty there is not a direct link, but there is a large indirect effect by satisfaction. The implications of this research, limitations and future research recommendations for are outlined.

Introduction

For a long time, tourism has been defined as economic catalyst for rural-economic development and renewal of rural areas (Sharpley, 2002). Each local rural community or wider rural area has certain characteristics that make it more or less capable of adapting to the constantly changing social conditions. Local potentials for the development of rural tourism is directly determined by social vitality, which also determines the contribution of rural tourism to the development of local community. Recognizing

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that rural space is much more than a place where agricultural production takes place, rural tourism is gaining new impetus (Irz et al., 2001). Rural tourism, as a significant segment of multifunctional agriculture, refers the fastest rural economy diversification, in particular by emphasizing the output of agri-food products in tourists quality nutrition (Cvijanovic & Mihailovic, 2016).

In last few years, rural tourism has been increasing owing to improved demand in the tourism market and measures implemented by countries to develop rural areas (Novakovic & Peric, 2018). Rural tourism is a key in the sustainable development of rural environments. Rural tourism has ability to create stable employment and the stability of tourist activity condition an acceptable level of profits (Martinez et al., 2019). It is a repercussion of the increasing urban population needs for recreational use of different, rural environment (Gašić, 2016). According to unofficial data and some estimates, about 25% of tourists in the world annually are keen for rural tourism (UNWTO, 2011; Radović, 2013). In the future this trend will continue, the research carried out by the World Tourism Organization (Gašić et al., 2014) supports this.

The regions of Šumadija and Western Serbia have great potential for rural tourism development. The region of Šumadija and Western Serbia is the largest in terms of surface area. Also, that is the most visited region in Serbia. Quality has become one of the most consequential elements in the business of rural tourism households (Gašić et al., 2015b), and thus has attracted our attention for research, bearing in mind that research of rural tourism quality is rare (Loureiro & González, 2008). This paper examines the impact of service quality on the satisfaction and loyalty of tourists in the rural tourism of Šumadija and Western Serbia.

Literature review

Rural tourism, as the broadest term, includes all types of tourism and services that take place in rural environments (Roberts & Hall, 2008). Rural space is considered to be areas in which the present or recent past has been dominated by land use, most often through agriculture, dominated by small settlements with a strong connection between built and natural environment and which nurture a lifestyle built on the basis of environmental maintenance (Cizler, 2013). Rural tourism encompasses all types of tourism in rural spaces (Demonja & Ružić, 2010). Rural tourism represents tourism that happens in the countryside (Lane, 1994). Rural tourism includes a wide range of activities, services and additional facilities to attract tourists in order to generate additional income (Milićević et al., 2015).

Rural areas are coming into the spotlight now (Milićević et al., 2015). Growth of rural areas is an essence for valoriation of sector of agriculture (Perić et al., 2020). In all developed countries rural tourism has potential for growing (Loureiro & González, 2008; Lee & Kim, 2009; Koster & Lemelin, 2009; Chuang, 2010). In order to revitalize the villages, inculcate money and offer different experience, rural and eco-tourism appeared (Blažević et al., 2018). For rural areas that have been or are still economically

underdeveloped, tourism plays an consequential part in evolvent (Podovac et al., 2019; Jurdana & Frleta, 2012). Consequently, the rural tourism development meliorate activity of the population of rural sector and economic position (Mandarić et al., 2017).

Rural tourism is often considered a good option for rural development and poverty reduction (Xue & Kerstetter, 2019). A sufficiently solid basis are households, the conservation, natural resources and their attractiveness and richness (Gašić et al., 2015a; Pavlović, 2016; Novaković & Perić, 2018). Even so, rural tourism has not been amply developing the opportunities it has. According to statistical data, the region of Šumadija and western Serbia is one of the five largest regions in terms of population and area, and that is the most frequented by tourists and generates 17.18% of arrivals and 42.1% of overnights in terms of total tourist traffic in the Republic of Serbia (Statistical Yearbook, 2019). Rural tourism has been considered as a means of achieving economic and social development and regeneration that can benefit to local people (Fang, 2020).

In Serbia rural tourism is associated with rural environments that represent the basic receptive areas of rural tourism, while the main emitting areas of rural tourism are precisely large urban agglomerations and highly urbanized environments. Through rural tourism of Serbia, quality products and services of various activities are presented (catering, rural, food processing, entrepreneurial, cultural-artistic, sports-recreational offer) (Simonović & Ćurčić, 2020). Rural tourism of the Republic of Serbia relies primarily on domestic demand from urban areas, so that its more intensive development could contribute to the transfer of income from economically developed urban regions to underdeveloped rural areas. Thus, tourism would contribute to faster economic development of rural areas, which would reduce the existing gap in the development of rural and urban areas (Vuković, 2017). The development of rural tourism is based on enriching the supply of family rural households, primarily through the establishment of local and regional human-created attractions such as wine cellars, recreational facilities, viewpoints, theme parks and the like. Priority is given to thematizing supply by grouping rural households according to different topics (family, organic farming, riding programs, cyclotourism) (Dašić et al., 2020).

The delivery of high quality services to customers is recognized as a essence factor who has an effect on the company performance (Vujić et al., 2019). Consumer satisfaction, loyalty and service quality and their connection are among the most popular topics for researchers (Zabkar et al., 2010), while rare research has been applied in rural tourism (Loureiro & González, 2008). Tourism as a service industry requires an understanding of the needs, attitudes, expectations and preferences of service users (Topalović & Marinković, 2020). Rural tourist destinations are increasingly dependent on quality. Quality has become the most important element of rural tourist households (Gašić et al., 2015b). Sercice quality in rural tourism is created by the processes of service delivery (friendliness, courtesy, efficiency, reliability, staff competence) and outcomes of services (accommodation, food, leisure facilities) (Žabkar et al., 2010). Service quality in rural tourism is conceived as evaluation of performance (Su et al., 2016).

It is not easy to define and determine service quality, unlike product quality, primarily because of features such as intangibility, heterogeneity, inseparability, and sustainability (Lee et al., 2011). Service quality has two dimension (technical and functional quality), and Grönroos (1984) was the first to define them. The difference between consumer expectations and the perception of service delivered is a service quality (Parasuraman et al., 1985). Those authors have envolved a as SERVQUAL (service quality measurement model), within which they identified five dimensions of service quality: tangibility, reliability, accountability, safety and empathy (Parasuraman et al., 1988). The SERVQUAL model makes it possible to crossbreed consumers' perceptions with their expectations and thus to distinguish between the expected and the delivered service. Cronin and Taylor were criticized SERVQUAL model (1992, 1994), so they developed the SERVPERF model. Those authors did not attach significance to expectations. Accordingly, Lourerio (2006) developed a RURALQUAL model. This model is used in measurement of service quality in rural tourism, and it identifies six dimensions of rural tourism service quality: complementary benefits, core benefits, professionalism, reservation rural and cultural environment and tangibility (Loureiro & Kastenholz, 2011; Loureiro 2012). By this model service quality is a multidimensional construct (Maestro et al., 2007; Grubor & Milićević, 2019).

Satisfaction of toursits can be understood as an assessment of the customer experience of the services offered, wherein for the satisfaction of tourists it is necessary that the service be rated at least as expectedly good (Singh, 1991). When the customer uses the service and liken the experience with the expected one, customer obtain satisfaction/dissatisfaction as a result (Heung & Cheng, 2000). Consumer satisfaction is a replication that can be emotional or cognitive, with a exacting focus, and associated with a particular moment (before and after consuming the service) (Giese & Cote, 2000). Thus, in tourism, tourists' satisfaction rely on their experience and their observation of provided service quality (Perić et al., 2018).

Loyalty is the prospect that consumers will use a certain type of brand in the coming period, regardless of the market opportunities and efforts of competitors offering the same or similar products and services (Veljković & Djordjevic, 2010). According to Pike (2009), the highest level of loyalty to a destination is manifested by the plan of tourists to see destination, stay in destination, come again, as well as making recommendations to their friends to visit the destination. Image and quality of destination are an essential element for the loyalty and repetition of tourists' visits to the destination, as confirmed by numerous previous studies (Hosany et al., 2006; Chen & Tsai, 2007; Bigovic, 2016).

Research Hypotheses and Model Construction

Chen and Tsai (2007) state that quality, as an assessment of a standard related to the process of consumption or consumption of services, and in relation to experience gained, is recognized as a predictor of satisfaction. Numerous previous studies confirm this link (Bigovic, 2016; Zabkar et al., 2010; Hi & Song, 2009; Hu et al., 2009; Nowacki, 2009; Loureiro & González, 2008) and it is possible to find that perceived quality has a

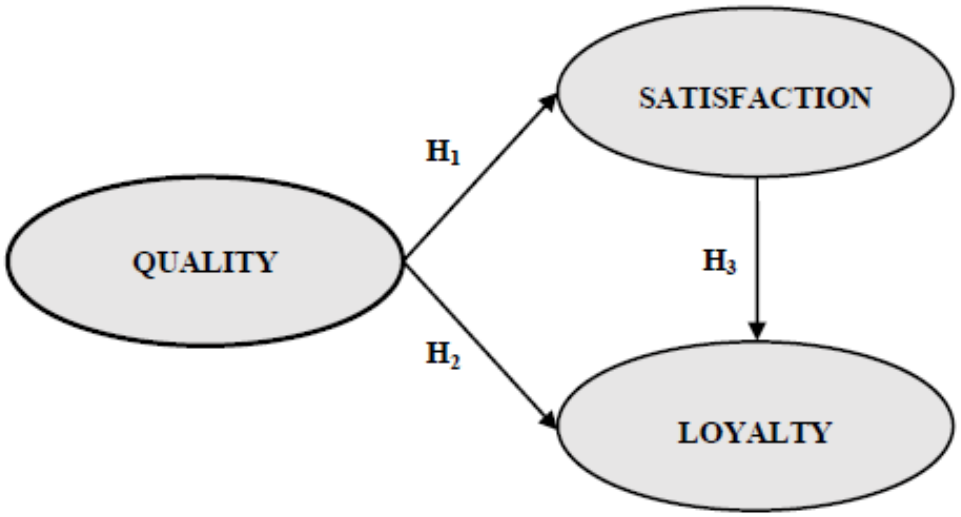
positive impact on tourists' satisfaction. Accordingly, the first hypothesis is formulated: H_1 Rural tourism service quality has a positive impact on tourists' satisfaction.

It has been theoretically observed and empirically ratified that service quality has a positive impact on loyalty, which is manifested through repurchase, that is, with the intention of conducting positive word-of-mouth propaganda (Chi et al., 2020; Bigović, 2016; Casidy, 2014; Žabkar et al., 2010; Hi & Song, 2009; Loureiro & González , 2008; Hennessey et al., 2007; Tsiotsou, 2006; Petrick, 2004). Consequently, we formulate a second hypothesis, which reads: H_2 Rural tourism service quality has a positive impact on tourists' loyalty.

Satisfaction is the overall emotional response of varying intensity and limited duration and represents the level of overall satisfaction that results in satisfying desires, expectations and needs (Chen & Tsai, 2007; Giese & Cote, 2000). Wang and Hsu (2010) state that it is generally accepted that loyalty is directly conditioned by satisfaction as confirmed by numerous previous studies (Bigović, 2016; Chen & Kao, 2010; Žabkar et al., 2010; Loureiro & González, 2008; Chen & Tsai , 2007; Kozak & Beaman, 2006). In accordance with the above, we formulate a hypothesis that reads: H_3 Satisfaction significantly affects the loyalty of tourists in rural tourism.

The relevant theoretical and empirical research concepts were base for research model (Figure 1) that illustrates the relationship among quality, satisfaction and loyalty of tourists in rural tourism in Šumadija and Western Serbia.

Figure 1. Research model



Source: Constructed from a literature review

Methodology

Sample and Data Collection

Primary data were collected with a questionnaire-based survey method. The survey was conducted at the beginning of 2020, which was distributed via the social networks Facebook and Twitter, as well as on the official profile of the Western Serbia Tourism Organization, using the non-probability sampling method, i.e. the convenience sample. The sample has 299 respondents. According to the sample male are most of the respondents (169 respondents). When it comes to education, the respondents are generally highly educated, given that the majority of respondents (43.5%) belong to the category of college and university education. Postgraduate studies have 30.8% of respodents, 24.1% secondary school and 1.7% primary school. About half of the respondents 42.1% are between 25 and 44 years old. The largest number of respondents are from the Belgrade region (36.5%), 28% from regions of South and East Serbia and 26.8% from Vojvodina. The smallest number of respondents came from the Šumadija region and Western Serbia (6%) and 2.7% are from a foreign country.

Variables and Measurement

The RURALQUAL model is developed by Lourerio (2006). This model was used to measure the perceived rural tourism service quality. Evaluation of service quality is based on the opservation of the service actually provided or experienced (Kang, 2006). Respondents rated perceived service quality based on 22 questions (see appendix 1). 4 questions were used to measure tourists 'satisfaction (Loureiro & González, 2008), while tourists' loyalty was measured through 3 questions (Kim & Lee, 2018; Pan et al., 2017) (see appendix 1). Responses were measured using a five-point Likert scale (from strongly disagree to strongly agree). SEM analysis was used to test the link between service quality, satisfaction and loyalty of tourists in rural tourism of Šumadija and Western Serbia and to test the hypotheses. Cronbach's alpha values range from 0 to 1, with values greater than 0.7 being considered to indicate adequate reliability. The results presented in the table below show good reliability and very good reliability.

Table 1. Cronbach's alpha analysis

Latent variables	α
Quality	0.938
Satisfaction	0.941
Loyalty	0.883

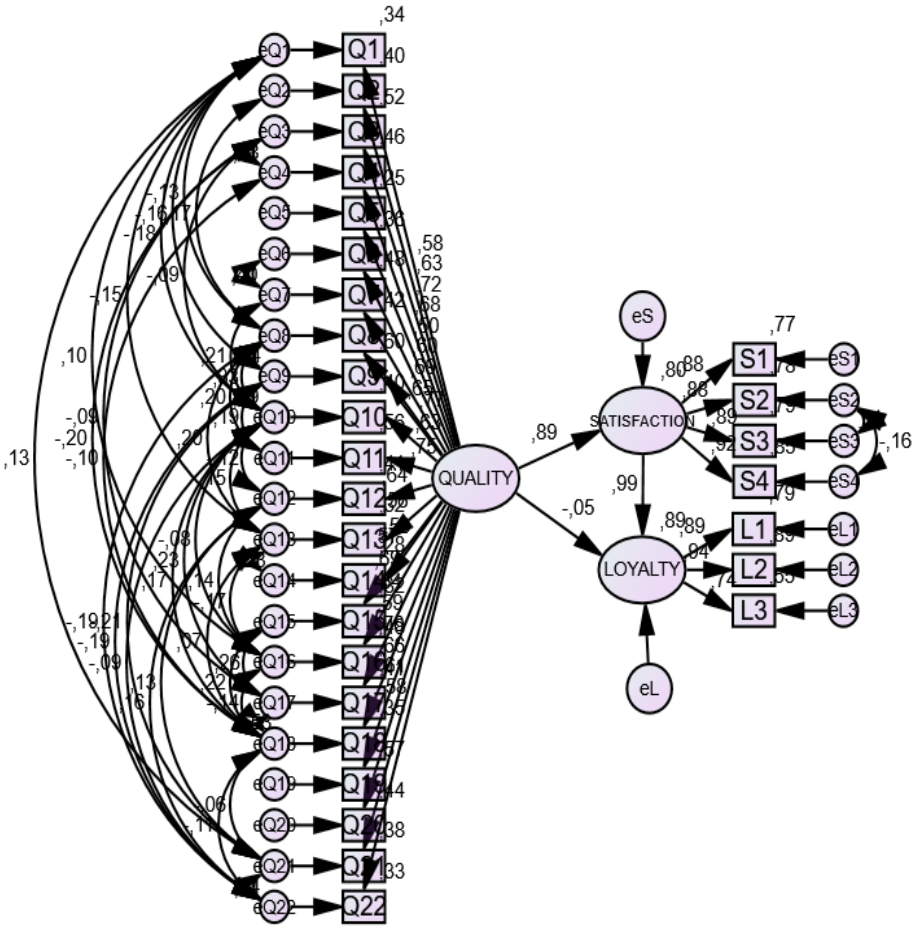
Source: Calculation based on SPSS 21.0.

Results and discussions

Model specification

The input to the analysis were original data, and for the evaluation of the model parameters was used AMOS v.21. The initial model showed poor performance, so its specification was performed. On this occasion, particular care was taken not to change the theoretical assumptions, but only to obtain better model measures. No new latent variables were added nor were the relationships among them that were theoretically based deleted on model respecification, on the contrary, the model suggested parameters based on the values of the modification indicator and the matrix. The final model is demonstratived in the following figure.

Figure 2. Final research model with results



Source: Constructed based on AMOS v.21

Model estimation

The model measures were evaluated based on the $\chi 2$ test and the RMSEA indicator and its 90% confidence interval, CMIN / df and CFI. A model is acceptable if the values of these indicators are within the following limits (Brown, 2015; Kline, 2016): $\chi 2$ - should be insignificant, ie. p> 0.05 RMSEA≤ 0.08; 90% CI RMSEA≤ 0.08; CMIN / DF between 1 and 3; CFI (≥ 0.90). The following indicator values were obtained: $\chi 2$ (483) = 587.67; p = 0.00; RMSEA = 0.051; LO 90 = 0.044; HI 90 = 0.058; CMIN / DF = 1.78; CFI = 0.957. From the obtained values it can be seen that the general indicator $\chi 2$ is statistically significant, which indicates that the model does not fit. However, with such a large number of degrees of freedom, $\chi 2$ is not reliable, so it is better to rely on other indicators. The RMSEA indicator is below the limit indicating an excellent model (0.06). The same applies to the confidence interval of this indicator, which is completely below the critical value of 0.08. The CMIN / DF indicator is within the boundaries that indicate a good model and the CFI is above the lower limit of model acceptance. This means that the model fits the population reasonably well. There are no locally problematic sites in the model after respecification (Figure 2). It can be stated that the model reproduces well the original variance/covariance matrix and is acceptable. The following table shows the percentage of explained variance of indicators and statistical significance.

Table 2. Structural model loadings

Variables	Loadings	S.E.	low 95%	high 95%	*t*-Value	*p*
Quality						
Q1	0.59	0.10	0.39	0.78	9.416	***
Q2	0.63	0.13	0.38	0.89	9.311	***
Q3	0.72	0.12	0.50	0.95	10.393	***
Q4	0.68	0.14	0.41	0.94	9.861	***
Q5	0.50	0.13	0.24	0.76	7.702	***
Q6	0.60	0.14	0.33	0.86	8.909	***
Q7	0.69	0.15	0.40	0.99	10.022	***
Q8	0.65	0.14	0.37	0.93	9.458	***
Q9	0.77	0.16	0.47	1.08	9.92	***
Q10	0.63	0.16	0.32	0.94	9.171	***
Q11	0.75	0.13	0.49	1.01	10.581	***
Q12	0.64	0.12	0.41	0.87	10.107	***
Q13	0.56	0.16	0.25	0.88	8.455	***
Q14	0.53	0.14	0.26	0.80	8.059	***
Q15	0.57	0.14	0.30	0.84	8.611	***
Q16	0.69	0.12	0.46	0.93	10.059	***
Q17	0.64	0.15	0.34	0.94	9.37	***
Q18	0.59	0.16	0.29	0.89	8.537	***
Q19	0.76	0.15	0.47	1.04	10.744	***
Q20	0.67	0.13	0.40	0.93	9.744	***
Q21	0.61					***
Q22	0.74	0.09	0.39	0.76	10.646	***
Satisfaction						

Variables	Loadings	S.E.	low 95%	high 95%	*t*-Value	*p*
S1	0.88					***
S2	0.89	0.05	0.78	0.99	21.642	***
S3	0.89	0.05	0.79	0.99	22.235	***
S4	0.92	0.05	0.83	1.01	23.771	***
Loyalty						
L1	0.89					***
L2	0.94	0.04	0.86	1.02	25.916	***
L3	0.74	0.06	0.62	0.86	16.131	***

Source: Calculation based on Amos v.21

The previous table shows that all indicators are statistically significant (*** p <.001). The existence of a method effect on identifiers affected by the latent quality variable was identified. This effect is small, so it has not been further explored.

The following table shows the results of testing the hypotheses, i.e. the significance of the path.

Table 3. Hypothesis testing results

Hypothesized path (from → to)	Standardized path coefficients	*t*-Value	Hypothesis test
H_1: Quality → Satisfaction	0.893	11,141	Supported
H_2: Quality → Loyalty	-0.050	-0,571	Not Supported
H_3: Satisfaction → Loyalty	0.987	10,294	Supported

Source: Calculation based on Amos v.21

Based on the obtained results, hypotheses H1 and H3 are accepted, while hypothesis H2 cannot be accepted. The results shows that the Quality → Loyalty path is not statistically significant, while the other paths are. This result coincides with similar research in the field of rural tourism (Su & Fan, 2011; Loureiro & González, 2008). An additional analysis was made by removing the path from satisfaction to loyalty in the model. In this case, the direct effect of the quality of services on the loyalty of tourists in rural tourism of Sumadija and Western Serbia has been identified ($\beta = 0.899$; $p < 0.001$), which means that satisfaction is a mediating variable between quality and loyalty. The direct impact of quality on tourist satisfaction is relatively strong, statistically significant (0.893) and this is moving in a theoretically determined direction, while the link among tourists' satisfaction and their loyalty is very strong and statistically significant (0.893), that is moving in the direction hypothetically presented. The results obtained are in agreement with similar research in this area (Rajaratnam et al., 2014; Osman & Sentosa, 2013; Loureiro & González, 2008).

Conclusion

In recent years, rural tourism has recorded a constant rate of increase in tourist demand and has influenced the development of rural areas through their conservation, stopping the displacement of people from rural areas, creating opportunities to generate income from tourism services and strengthening local agriculture.

Rural tourism destinations are increasingly dependent on quality. Service quality is vital element of rural tourism households, given that quality as an assessment of standards related to the process of consuming services, and in relation to experience gained, is a significant predictor of satisfaction that further leads to loyalty.

This research investigates the effect of service quality on tourists'satisfaction and loyalty in rural tourism of Šumadija and Western Serbia. Based on the results obtained, the conclusion is that there is a direct influence of service quality on satisfaction, as well as the influence of satisfaction on the loyalty of tourists in rural tourism of Šumadija and Western Serbia. However, research findings did not confirm the direct effect of service quality on loyalty, with quality indirectly affecting guest loyalty through satisfaction. Accordingly, it can be concluded that there is mediation, that is, satisfaction is a mediating variable in the link among the service quality and the tourists' loyalty.

As the quality of services directly affects the tourists' satisfaction and indirectly their loyalty, measuring the service quality in rural tourism of Šumadija and Western Serbia and its continuous improvement are important for the business of rural lodging.

The survey conducted may also have implications for other rural tourism destinations, given that the RURALQUAL model developed by Lourerio (2006) was used to measure service quality, which can assist rural lodging as well as destination management in receiving feedback of provided service quality, in order to introduce an appropriate strategy for improving service quality, and as a consequence tourists will be satisfied with the quality of the service, which further leads to loyalty and profitability.

This research identifies certain limitations that offer the basis for some future research. For future research, the proposed model can be prolonged to other latent variables, such as image, which is an essential element for satisfaction and loyalty of tourists. Also, can be researched the impact of demographic characteristics (domestic and foreign tourists), on the link between service quality, satisfaction and loyalty of tourists.

Conflict of interests

The authors declare no conflict of interest.

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Appendix 1 Measurement items of quality, satisfaction and loyalty

Q1	The rural households food is well presented and tasteful.
Q2	The rural households employees have a clean and tidy appearance.
Q3	The clients are treated warmly and kindly.
Q4	A personalized care is provided to each guest.
Q5	The arrival schedules are determined, but they are quite flexible.
Q6	The reservations of rooms are easily performed.
Q7	The reservations are confirmed on the easiest way for guest, other informations of interest are sent also.
Q8	The rural households facilities are in good condition.
Q9	The rural households facilities and rooms have cozy furniture.
Q10	The rural household is well acclimated.
Q11	The rural household facilities and rooms are clean.
Q12	The decoration materials and objects are from local tradition.
Q13	The rural household access is easy.
Q14	The household offers easy parking.
Q15	The guests are included in rural life of region.
Q16	The typical region gastronomy is included on household menu.
Q17	The access to cultural, recreation, and/or sport activities is enabled.
Q18	Fairs, special parties and other aspects of cultural interest exist in the region enviroment.
Q19	The household employees know the job they are doing.
Q20	The household architecture has a style of a region.
Q21	The place where household is located has a beautiful natural prettiness.
Q22	The household is located in a peaceful place.
S1	I am satisfied with my stay in the rural household.
S2	The rural household provided the service I looked for.
S3	I am pleased with the services delivered by the rural household.
S4	In general, my experience is very positive.
L1	I will visit this rural household again.
L2	I will be happy to recommend this rural household to relatives and friends..
L3	I will visit this rural household in case of increased service prices.

Source: Kim & Lee, 2018; Pan et al., 2017; Loureiro & González, 2008.

DESCRIPTIVE STATISTICS IN CORPORATE MANAGEMENT AND EMPLOYEE ENGAGEMENT IN RURAL DESTINATIONS

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ABSTRACT

Organizations that hope to achieve a competitive advantage through employee engagement will be most successful by incorporating and including employee engagement in the performance management process. Therefore, essence of the performance management must to be convergence to employees and establish communication with each one. The aim of this study was to determine the relationship between employee engagement (assessment of employee competencies and preferences of the engagement mechanisms), and performance management process in rural destinations. In this paper, the assumption is that the employee are more engaged if they feels belonging to the organization and see the value of their work and that this can be achieved through rewards and recognition system and effective communication channels. The research was conducted on 79 employeed in the Fruška Gora National Park, Serbia.

Introduction

The motives are the engine of human activity. They are directed a human activity in a certain direction. Motivation is often defined as the process of excitation of its

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activities and other activities in order to achieve personal goals, and the goals of the system. It is believed that motivation is the result of the following hierarchy of needs: the need for self-actualization, the need for self-esteem, social needs, security needs and physiological needs. Motivation is an important factor which actuates a driving force for our actions and work. Baron (1983) explains that motivation represents a cumulation of various processes that impact and direct our behavior in order to achieve some specific goal. It explicitly creates and contains a positive effect on job, as it is such a dynamic in today's environment.

In a particular organization, it is possible to achieve the best performance with the most dedicated employees through employee motivation. Motivation and satisfaction of employees become the basis of modern organization. Emphasis is placed on the active management of their resources, and in the context of improving the use of human factors are developed various schemes to increase the motivation to work. Thereby it focuses particularly on job satisfaction as a significant indicator of employee motivation, the job stimulating and the total dimensions of the work.

This brings us to the concept of engagement. Engagement means that a person is psychologically present when he or she performs a certain role in an organization (Kahn, 1990, Kahn, 1992). People will be attentive, connected, integrated, and focused if they are psychologically present (Kahn, 1992). Therefore, it could be said that the roots of all human motives lie in pleasure. This paper started from the main hypothesis H: employee engagement is a key item for productivity. Based on the fact that the goals of every business enterprise are achieving better business results, the concept of a performance management process is arrived at. In order for a company to be successful it must respect the economic principles that define business success as the ratio between the target and the invested resources.

Therefore, in order for a company to be successful it must have "satisfied" employees by which are entitled some of the most important principles of success: productivity, efficiency, profitability and financial stability. The aim of this study is to determine the relationship between employee engagement and performance management process in the Fruška Gora National Park, Serbia. Keeping in mind specificity of national parks as an institution, in this case, the proposed engagement of employees is much more pronounced.

For the purposes of this research, survey was used as a method, whereby 79 questionnaires were analyzed. The participants were employees in the Fruška Gora National Park.

Theoretical Background

One variable that has been receiving increasing attention as a key determinant of performance is employee engagement (Macey et al., 2009). Employee engagement enables employees to completely fulfil job requirements while expressing their preferred selves (Kahn, 1990). This means that people who are engaged keep their selves when performing their professional duties. In other words, engagement means that employees show a high level of energy and identification with their work, but do not reach a point of

burnout, because that involves a low level of both energy and identification (Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Schaufeli & Bakker, 2004; Bakker, Demerouti & Verbeke, 2004; Schaufeli & Salanova, 2007). People who are engaged are committed to their tasks, cognitively alert, and passionately connected to others in ways that show their individuality (e.g., how they feel, what their thoughts and values are, etc.).

Different factors in the work environment are related to employee engagement. The question is how organizations can improve employee engagement? Due to the economic challenges in the modern world, organizations have tried to improve employee engagement by focusing on performance management (Buchner, 2007). Performance management is a crucial aspect of the effectiveness in an organization (Cardy, 2004). Due to the fact that performance management is an important process through which work is accomplished, it is the "Achilles Heel" of human capital management, which is why it should be managers' main priority (Gruman & Saks, 2011).

But less than a third of employees think that their performance depends on their company's performance management process. In addition, employee satisfaction surveys show that employees regularly rank performance management among the lowest topics (Gruman & Saks, 2011). Due to modern challenges, many organizations have decided to refocus their attention on performance management systems (Buchner, 2007) and find ways to boost employee performance. Employee engagement was described and measured as satisfaction, commitment, and discretionary effort in a paper that was recently published (Fine, Horowitz, Weigler, & Basis, 2010).

Kahn (1992) and Macey et al. (2009) models of employee engagement indicate the following: there is a state and behavioral dimension of employee engagement, the state of employee engagement precedes the behavioral dimension and leads to it. Performance outcomes directly depend on engagement behaviors. There are several theories and models in the literature which suggest how to improve employee engagement. Mone and London (2010) advise to design the performance management process that will stimulate employee engagement and trigger better performances. Factors that improve employee engagement may differ from those that were related to traditional employee outcomes such as job satisfaction and organizational commitment (Macey et al., 2009), since this is a relatively new concept (Macey & Schneider, 2008).

Much attention has been given to employee engagement in the last five years, especially in consulting firms and the popular press. Many consider it to be a crucial factor when it comes to the success and competitiveness of an organization. Schaufeli and Salanova (2007) suggest that engagement is "essential" for contemporary organizations because they are facing a lot of challenges. Macey et al. (2009) believe that organizations' competitive advantage depends on employee engagement. Many researchers note that employee engagement is the leading factor that influences attitudes, behavior, and performance of employees, as well as performance, productivity, retention, financial performance, and even shareholder return of an organization (Bates, 2004; Baumruk, 2004; Harter, Schmidt, & Hayes, 2002; Richman, 2006).

Macey and Schneider (2008) state that this concept has many definitions, but it is a common opinion that employee engagement is beneficial, it has an organizational purpose and combines psychological and behavioral factors since it involves energy, enthusiasm, and focused effort. Harter, Schmidt, and Hayes (2002) define employee engagement as "the individual's involvement and satisfaction with as well as enthusiasm for work" (p. 269). Leiter and Maslach (1998) define engagement as the opposite pole of burnout (Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Schaufeli & Bakker, 2004; Bakker, Demerouti & Verbeke, 2004). The definition of engagement that they provided is "an energetic experience of involvement with personally fulfilling activities that enhance a staff member's sense of professional efficacy" (Leiter & Maslach, 1998; Gruman & Saks, 2011) and they believe that engagement is a combination of energy, involvement, and efficacy (Maslach, Schaufeli, & Leiter, 2001).

Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002) believe that the concept of engagement is the opposite of burnout. However, they believe that these concepts are independent states which do not have a similar structure, so different instruments are used to measure them. They view engagement as "a positive fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (p. 74). Rothbard (2001) also states that a key component of engagement is absorption (attention is the other component). Schaufeli and Salanova (2007) state that being completely absorbed in a role is similar to the concept of "flow" which was introduced by Csikszentmihalyi (1990) (Gruman & Saks, 2011). They believe that these concepts differ in a way that engagement is a persistent work state while flow is more complex as it involves momentary peak experiences which do not have to take place at work. According to Schaufeli and Salanova (2007), engaged employees are energetically and effectively connected to their work. Investing one's "self" in work-related activities can lead to this (Gruman & Saks, 2011).

It is stated in Kahn's (1990) paper on personal engagement that engagement includes "the harnessing of organizational members' selves to their work roles; in engagement people employ and express themselves physically, cognitively, and emotionally during role performances" (p. 694). According to him, there are three psychological conditions of personal engagement which show that people enter contracts when they see clear benefits (psychological meaningfulness), protective guarantees (psychological safety), and resources to honor (psychological availability). Employees have implicit and/or explicit expectations from an organization (Rousseau, 1990; Gruman & Saks, 2011). Those expectations can be the basis of psychological contracts between employees and employers which includes reciprocal obligations (Rousseau, 1990). Banks and May (1999) claim that for stable jobs which include following procedures that are easily observable, it is possible to apply the traditional approach to performance assessment.

On the other hand, contemporary jobs are not as static as traditional ones (Singh, 2008). The definition of a job and good performance varies nowadays (Fletcher & Perry, 2001). Fletcher and Perry (2001) claim that performance has a multidimensional and dynamic nature which can be measured with the development of notions such as emotional

intelligence (Goleman, 1998; Gruman & Saks, 2011) and the difference between task performance and contextual performance (Borman & Motowildo, 1993; Gruman & Saks, 2011). Concepts that can also be used to measure performance are adaptability (Pulakos, Arad, Donovan, & Plamondon, 2000), creativity (Tierney & Farmer, 2002), and proactivity (Bateman & Crant, 1993; Grant & Ashford, 2008), as these are the outcomes of behavioral engagement (Macey et al., 2009).

The research methodology

Study area

Fruška Gora is a mountain in the northern part of Srem (South-western Vojvodina) i.e. south-eastern periphery of the vast Pannonian Plain. It is located between 45° 00' and 45° 15' north latitude and between 16° 37' and 18° 01' east longitude. The surface of Fruška Gora Mountain is 21,500 km^2, which makes 24.3% of the whole territory of the Republic of Serbia (Đurđev, Arsenović & Dragin, 2010). The mountain is mostly situated in Srem, in Serbia. But, as this part of Vojvodina lies between the Danube and the Sava rivers, there is a small part of Fruška Gora in the far west which is located in Croatia (Bukurov, 1978).

Fruška Gora is 80 km long in the west-east direction. It is very beneficial for the development of sport and recreational tourism (Jovičić 1962; Milić 1973; Vujko, Plavša; 2010), as it is a low island-type mountain with the peaks Crveni čot (539 m), Orlovac (512 m), and Iriški venac (490 m). It was declared a national park in 1960 in order to protect and enhance its natural beauty and natural values.

Sources of data

A public company Fruska Gora National Park, was founded in 02/10/1961 and based in Sremska Kamenica. It has 161 employees, led by the director. Financing the development and protection of national parks is regulated by the Law on National Parks and is performed from the Budget of Republic of Serbia, control activity, from the compensation for the use of protected natural resource and donations. Due to the protected areas, in accordance with the existing protection regime, forests are used systematically, as well as hunting and fishing fauna, soil, etc. public companies like guardians of the national parks are financed out of such activity. Systematically hunting is allowed, and the revenues are from hunting and fishing. The study included 79 participants, employees in the Fruška Gora National Park. The survey was conducted between January and March 2018.

Methodology

The management represent successful disposal of limited resources or funds, or ability to perform the specified work. Keeping in mind specificity of National Park as an institution as well as limited resources to achieve a certain profit, the paper put emphasis on employees and relationship between employee engagement and performance management process. In order to test the main hypothesis H: that the

employee engagement is a key item for productivity, it was necessary to answer the question: *how to motivate employees to achieve their engagement at work*?

The paper was composed of two parts. In the first part of the paper was used the model of Khan. Kahn (1990) claims that there are three psychological conditions: psychological meaningfulness, psychological safety, and psychological availability. They are precursors of personal engagement. Participants were asked certain questions, and they responded in accordance with their personal experiences.

Psychological meaningfulness is defined as one's opinion on how meaningful it is to invest oneself into a role performance. It is connected to the motivation to engage and the belief that one will receive a return on investment of one's "self-in-role." When people feel appreciated, valuable, acknowledged psychological meaningfulness is achieved. Kahn (1990) believed that three factors influenced meaningfulness: task characteristics, role characteristics, and work interactions. According to this Khan's statement, the participants were asked an open question: What makes you feel worthwhile, valuable, and that they matter?

Psychological safety is one's belief of whether it is safe to invest one's self into a role performance without fear of negative impact on self-image, status, or career. People feel safe to risk self-expression in reliable and predictable social environments which have clearly defined acceptable behaviors. The four factors that, according to Kahn (1990), affected psychological safety were interpersonal relationships, group and intergroup dynamics, management style, and norms. According to this Khan's statement, the participants were asked an open question: How safe do you feel to express personal opinions?

Psychological availability is a concept that refers to one's availability to invest oneself into a role performance. It refers to an individual's belief that he/she can bring physical, emotional, and psychological resources to their roles. Kahn (1990) stated that there are four factors which can affect psychological availability: lack of physical and emotional energy, insecurity, and outside lives. According to this Khan's statement, the participants were asked an open question: What gives you a clear boundary inside of which you feel safe?

The second part of the paper aimed to determine which mechanisms contribute to increased employee engagement and to what extent may contribute to increased employee engagement. The assessment is carried out through four key indicators on five-point scale from 1 (does not meet) to 5 (fully meets), by Likert type. Mechanisms were: relationship according to work; relationship according to work performance; initiative and innovativeness. The employees were given questionnaires with answers. It was necessary to round specific values. As the final result was calculated the average score on all criteria, that was an indicator of an adequate mechanism for engagement, i.e. evaluation of employee engagement in the Fruška Gora National Park.

Engagement mechanisms are included in the planning processes and organizational

environment, and not only the techniques of direct stimulation, which are mainly used in the research of motivation.

Results and discussion

The adequate engagement of the employees is usually measure by job satisfaction and represents a crucial condition for achieving quality goals and the path to business excellence. The satisfaction, i.e. job dissatisfaction is to some extent an indicator of incentives of work and the total work situation. There are two contributing factors that affect employees' engagement at work, as can be seen in this paper. The first factor can be seen in Table 1 and Attachments 1, 2 and 3 (by Khan's method), namely: rewards and recognition system (a, b, c, f, g, h, i, j, p, t and u). An important management instrument used to motivate employees is rewards and recognition system. This means that reward system attracts people to join the organization, motivates them to come to work and perform tasks at high levels (Mahazril, Zuraini, Hafizah, Adnan, Zaherawati, Nazni & Badrul, 2012).

Table 1. Engagement mechanisms

Attachment 1. What makes you feel worthwhile, valuable, and that they matter?	Frequency	Valid Percent
a. Organize work so that employees feel that they are doing important and meaningful work	10	12.7
b. Delegate more rights and responsibilities of employees for the performance of the whole deal, so they have more autonomy and self-control	10	12.7
c. Introduce forms of participation of employees in decision-making	15	19.0
d. Introduce the practice of regular employees informed about important developments in the company and the possibility of permanent communication with the managers,with the obligation to return information	10	12.7
e. To encourage teamwork, organize teams for the completion of complex tasks	5	6.3
f. Introduce a system of special cash bonuses for the results of which would be periodically assign	9	11.4
g. Introduce the practice of contracting duties and salary of each employee individually	10	12.7
h. Introduce the practice of contracting duties and salary of individuals in key positions, salaries and others are regulated by collective agreement	10	12.7
Total	79	100.0
Attachment 2. How safe do you feel to express personal opinions?	Frequency	Valid Percent
i. Introduce the group incentives, equal for all members of the group, rather than individual	13	16.5
j. Introduce the appropriate types of rewards that would cover all employees, regardless of the results of conditioning	15	19.0
k. Ensuring the safety of the workplace for all	15	19.0

l. Introduce the obligation of managers to develop good relationships	11	13.9
m. Transferred the powers of the directors to direct managers, managers and supervisors that they can largely affect the recruiting of	13	16.5
n. Invest in education and training, to create conditions for the application of knowledge and skills	12	15.2
Total	79	100.0
Attachment 3. What gives you a clear boundary inside of which you feel safe?	Frequency	Valid Percent
o. Conduct a job analysis and description, standards, and procedures and to establish a system of performance measurement, and on this basis to build the system of distribution of earnings	14	17.7
p. Rewards and punishments applied consistently, depending on the results of work	7	8.9
q. Establish a system of strict control and direct working methods	15	19.0
r. Control only the results of work	16	20.3
s. Set clear goals and a strategy for enterprise development	10	12.7
t. Introduce the practice that employees participate in profit distribution upon the completion of periodical calculation (stocks, shares)	10	12.7
u. Key elements of the distribution of earnings for all employees regulated by collective agreement	7	8.9
Total	79	100.0

Table 2. The estimates of which mechanism may contribute to increased employee engagement and what measure may contribute to increased employee engagement

	N	Min.	Max.	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
The relationship according to work							
Execution of the work obligations within the prescribed period	79	1	5	3.54	0.106	0.945	0.892
Expediency	79	1	5	3.24	0.099	0.880	0.775
Orderliness	79	1	5	3.30	0.113	1,005	1,009
Efficiency	79	1	5	3.70	0.092	0.822	0.676
Compliance with all the rules of the employer	79	1	5	3.61	0.104	0.926	0.857
The relationship according to work performance							
Respect of the working hours	79	1	5	3.94	0.089	0.790	0.624
Relationship with colleagues in a team	79	1	5	4.04	0.093	0.823	0.678
Teamwork	79	1	5	4.29	0.087	0.770	0.594
The initiative							

	N	Min.	Max.	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Provision of proposals for improving the quality of work	79	1	5	3.23	0.110	0.973	0.947
The innovativeness							
Providing ideas and ways to improve the quality of work conditions	79	1	5	3.71	0.122	1.088	1.183

A research on the effect of rewards and recognition system that was conducted by Rizwan & Ali (2010) showed that managers can provide recognition to employees by having informal talks with them, spending time with them having dinner or engaging in other activities such as taking about their families and other important parts of their personal lives. They also stated that reward and recognition in an organization can lead to favourable working environment which motivates employees to perform exceptionally well. Perry and Lois (1990) conducted a research that showed that that financial rewards were not the most important motivator. Different studies have showed that monetary incentives are not the biggest motivating factor for employees and some managers have even said that money has had a negative impact on their employees' motivation.

The second factor can be seen in Table 1 and Attachments 1, 2 i 3 (by Khan's method), namely: effective communication channels (d, e, k, l, m, n, o, q, r and s). In addition to rewards and recognition, one of the most important motivators for employee engagement is communication. Organizations use effective communication channels to motivate employees. Managers communicate with employees so that they would understand them better. They also motivate employees by providing relevant information and maintaining positive attitude in the workplace (Mahazril et al, 2012). Effective company communication increases motivation among employees and improves their understanding of work (Perry & Lois, 1990).

Open communication will make employees loyal to the organization and make them feel respected. In this way, the level of employee motivation will increase (Mahazril et al., 2012). The responses to the first question: What makes you feel worthwhile, valuable, and that they matter? (Table 1, Attachment 1), are confirmed lower-level hypothesis h1: that the sense of belonging to the company has a positive effect on better employee engagement. Namely, the most response to this question was that it was necessary to introduce forms of participation of employees in decision-making (19%), and the other answers were very uniform.

The responses to the second question: How safe do you feel to express personal opinions? (Table 1, Attachment 2), are confirmed lower-level hypothesis h2: leeway in designing various end products and the feeling that someone valued the work has a positive impact on employee engagement. The most response to this question was

that it was necessary to introduce the appropriate types of rewards that would cover all employees, regardless of the results of conditioning (19%) and it was necessary to ensuring the safety of the workplace for all (19%). It allows freedom of expression because the employee feels undisturbed and unrestricted. In addition to these responses, and all the other responses were equally represented (Table 1 and Attachment 2).

The responses to the third question: What gives you a clear boundary inside of which you feel safe? (Table 1 and Attachment 3), are confirmed lower-level hypothesis h3 - appointment of clear objectives of the company has a positive effect on employee engagement. Employees responded that they believed it was necessary to control only the results of work (20.3%) and establish a system of strict control and direct working methods (19%). Namely, by setting the clear boundaries of the company activity, employees can make freedom of expression within these boundaries. If we're really going to motivate someone, we must understand their needs and goals. There is a big difference between the internal running of the employee and outside of employee's efforts to move into action.

The second part of the paper was to determine which mechanisms contribute to increased employee engagement and to what extent may contribute to increased employee engagement. From employees were asked to critically evaluate individual engagement mechanisms to obtain the average evaluation. The results seen in Table 2 show that the employees of the Fruška Gora National Park meet the criteria that the average score of their engagement are 4, which is satisfactory. Individual scores are in the range 3.23 - 4.29 (Table 2), a grade point average in relation to its mechanisms are telling us that the worst is rated the initiative (3.230), and best is rated the relationship according to work performance (4.090). The analysis of the data confirmed lower-level hypothesis h4 – that the successful performance management process has a positive effect on employee engagement.

Conclusion

Contrary to popular belief, the primary reason why employees are not engaged at work are not salary and reward dissatisfaction. It has come to the conclusion that on the employees engagement affects their sense of belonging to the company, evaluation of their efforts, clear guidelines within which the company operates as well as successful performance management process, and best tool to achieve these results are rewards and recognition system and effective communication channels.

Maintaining and enhancing the level of employee engagement is affected by the way top management meets their needs and expectations. Likewise, and results from the minimum difference in engagement testifies to the fact that employers should not underestimate the older and experienced employees, but should consider different options to keep their most loyal and most engaged workforce (for example: part-time and other flexible forms of work).

Personal commitment to the organization's main asset is the most important driver of employee engagement, while the second most important driver of employee engagement is a faith in the quality and competitiveness of products and services of company. These

findings confirmed the main hypothesis H - employee engagement is a key item for productivity. Employees who are engaged want work-life balance, flexible jobs, leaders that respect and trust them, they want to take part in the decision-making process, work with top management (customers, suppliers) and with inspirational people.

They want to be involved in important projects, manage people, have effective communication, work in a supportive environment, have international opportunities, and receive positive feedback. Also, they highly value the opportunity to advance in their career, employers that foster individual development, flexible financial benefits, etc. Employee satisfaction (as well as customer satisfaction) should be directly connected with the effective performance management and customer relationship management in order for a company to improve employee engagement and business results (Bakker & Demerouti, 2007; 2008). In this way, managers will acquire an interest in the implementation of various programs to encourage employee engagement and satisfaction.

Psychological contracts fulfillment is associated with both task-related and non-task-related performance (Turnley, Bolino, Lester, & Bloodgood, 2003) and can also result in higher levels of engagement. Therefore, employee engagement as a preferable result of the performance management process is an important but untested development in the related literature (Sparrow, 2008). In addition, organizational research takes on a positive approach to appreciating organizational phenomena, building on the positive psychology movement (Seligman & Csikszentmihalyi, 2000; Gruman & Saks, 2011).

Positive organizational behavior (Luthans, 2002a, Luthans, 2002b) and positive organizational scholarship (Cameron & Caza, 2004; Gruman & Saks, 2011) are the most important among these approaches. The application of this approach is employee engagement. Recent trends in performance management literature and organizational sciences show that employee engagement contributes to performance management (Stiles, Gratton, Truss, Hope-Hailey, & McGovern, 1997). Employee engagement in the performance management process can improve performance beyond that achievable by focusing on performance itself (Latham, Almost, Mann & Moore, 2005).

Performance management is made more difficult by certain changes in the workplace such as decentralization, insufficient experience, large spans of control, greater number of knowledge workers (Fletcher & Perry, 2001). Pulakos, Mueller-Hanson, and O'Leary (2008) state that employee management and employee goal-setting are difficult to achieve in economies dominated by knowledge. Therefore, modern processes in performance management need to give attention to creating conditions for knowledge workers engagement if they want to make enhanced performance, which is desired in advanced economies, easier. In other words, contemporary performance management deals both with managing performance and the context in which performance takes place (Dobbins, Cardy, Facteau & Miller, 1993; Jones, 1995).

Conflict of interests

The authors declare no conflict of interest.

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THE EXAMINATION AND ASSESSMENT OF WINERY BUSINESS AND CONTRIBUTION TO THE DEVELOPMENT OF WINE TOURISM OF SERBIA

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A B S T R A C T

The tradition of winemaking on the territory of Serbia dates back to ancient times. Today the activities related to wine production are on the rise, as is the number of wineries, and they participate in the valorization of wine tourism activities as an important Serbian tourist product. The aim of this paper is to assess the business excellence of wine producers in Serbia via the application of BEX model while establishing a correlation with the data on the promotion of wine tourism activities on the analyzed wineries' websites. The attained research results indicate a decrease in the BEX index in 2018 in comparison with the values from 2017 and are within the parameters for good values. However, there is no correlation between the performance of wineries and the promotion of wine tourism on their websites.

Introduction

The quality of business process realization and the business success of companies both depend on risk exposure and appropriate risk management (Regester, Larkin, 1997). According to Stanišić et al. (2017) what is especially reflected in the success of subjects in the economy is extensive exposure to business risks. It is important to bear in mind the significance of the correct choice of business model in order to prevent a negative business result, i.e. business loss (Berk et al., 2012). Among a great number of models for examining and assessing business success the most commonly used models are the Altman model, the Kraličeк DF, the Quick Test model, the Zmijewski model, and

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the BEX model. Present authors have opted to utilize the BEX model for the purposes of this paper, which is designed for the Croatian market (Belak and Aljinović-Barać, 2008), but is also applicable to economies in the region. Therefore, it is possible to conduct business performance analysis of businesses from Serbia.

The subject of research in this paper is to examine and assess the business success of wine producers using a sample of 50 wineries in Serbia. The analysis and data processing is based upon collected, compiled and processed values from financial reports of the analyzed sample of companies for the business years 2017 and 2018. Several authors have applied in their research the analysis of business excellence of commercial subjects via the BEX model (Rajin et al., 2016; Knežević et al., 2014; Alihodžić, Džafić, 2012; Bubić, Hajnrih, 2012; Belak et al., 2011; Belak, Aljinović-Barać, 2008) in different commercial areas. At the same time, this paper includes a correlation analysis of the existence of wine tourism activities promotion impact on the wineries' websites and business success calculated by the BEX model. In this regard, there is a research question *whether wineries that promote wine tourism activities on their websites have a better rank of business success in accordance with the values of the BEX model than wineries that do not promote wine tourism activities on their website but implement them, which is confirmed in a survey at the Wine Fair.*

According to the on-line statistical data of the International Organization of Vine and Wine, the entire world produced in the year 2017 a total of 248,749,000 hl of wine, and in the year 2018 a total of 293,562,000 hl of wine. The wine production data in Serbia show that in the year 2017 a total of 736,000 hl of wine were produced, and in the year 2018 a total of 665,000 hl of wine (www.oiv.int). Bearing in mind the favorable geographical position and climate conditions, along with the factors of topography, terrain inclination and soil composition specific for the territory of Serbia, the possibilities for growing vine and making wine are numerous. The number of wineries in the territory of Serbia is rising, which poses a challenge for marketing experts who create positioning strategies directed at Serbian consumers (Kuzmanović & Makajić-Nikolić, 2020). The current transformations of the agricultural sector have imposed new paradigms in using the land resources (Popescu et al., 2017). Crops production represents an important activity for land exploitation (Vasilescu et al., 2010). The reduction in the total produced amount of wine is affected by risks reflected in the variations in annual yields, i.e. the grape crop, which is itself impacted by various natural factors.

The aim of this research is reflected in the analysis of business performance of wineries that valorize wine tourism activities and promote the same on their websites. The results of this research have a scientific and practical contribution. The scientific contribution is reflected in the pioneering endeavor of researching the success of the winery business in relation to promotional activities on their websites. This research gave an assessment of the current situation and recommendations for future business. The specific practical contribution is reflected in the possibilities of using the research results, both by wineries and stakeholders, in order to design certain promotional policies that would contribute to the improvement of winery operations and the development of wine tourism in Serbia.

Research background

According to the results of paleontological examinations, vine can be found in prehistoric layers of soil, in the Younger Stone Age, in the Bronze Age, in the Iron Age, and covering vast expanses of land. It was able to cover such a great expanse of land owing to the birds which fed on the fruit and carried the seed (Avramov, 2010).It is generally accepted that the first vineyards were built around 6000 BC, north of the Caucasus, in what is now Georgia and Armenia (Despotović, 2012). In many archaeological localities special silver vessels were found containing vine coils. The long tradition of wine production was also confirmed in research in localities from the Roman Empire period where artifacts serving as wine vessels were discovered (Pavlović, 2007).

Viticulture and winemaking in the territory of Serbia have a long tradition as well. The exact time of the beginnings of wine production in Serbia is not known, but it is presumed that the history of winemaking in Serbia exceeds a millennium (Vlahović et al., 2008). It is thought that one of the Roman emperors, Marcus Aurelius Probus, planted the first vines in the space of Fruška gora and in the vicinity of Smederevo. Great devotees of viticulture and winemaking also included the rulers in the dynasties Nemanjić, Hrebeljanović and Branković who expanded the vineyards on Fruška gora and those around Smederevo and Vršac. Emperor Dušan had large vineyards and, in the vicinity of Prizren, the court wine cellar with a 25km long ceramic vineduct delivering wine straight from the vineyards and cellars in the surroundings of Velika Hoča. As a patron of viticulture and winemaking, Emperor Dušan established the Law on Wine which determined the rules of wine production, trade, and quality control. Medieval times in Serbia see an advancement and expansion in viticulture. Despot Stefan Lazarević, in the period of moving the capital city from Kruševac to Belgrade, also formed vineyard plantations in the vicinity of Belgrade, creating the then well-known Ritopek vineyards (Jakšić et al., 2015). However, the arrival of Turks to these parts stemmed the development, and even led to a decrease and halt in winemaking in the territory of today's Serbia, bearing in mind the religious tenets written in the Kur'an, as well as the directives to uproot vineyards. In this period, the production of wine was preserved owing to monasteries within which traditional winemaking was continued (Pivac, 2012). In the XIX century the vines in the territories of France and the Austro-Hungarian Empire became affected by phylloxera transferred in seedlings from American spaces which led to the devastation of a large number of vineyards (Ivanišević et al., 2015). This is when the production of grapes and wine was advanced in the spaces of today's Central Serbia, and Serbian wines makes their way into the European market. At the beginning of the XX century owing to the efforts of king Petar I Karađorđević and prince Aleksandar there were advancements in viticulture and winemaking in Serbia, and they personally grew large vineyards in the spaces of Oplenac and Topola, which in 1903 resulted in the formation of the Venčac vineyard cooperative, as one of the largest wineries in the Balkans (Pivac, 2012).

At the end of the Second World War, the renewal of the state began, as well as the revitalization and renewal of vineyards. In accordance with the economic and political

ideas of the time, cooperatives, large state estates and large wineries (*Navip, Rubin, Vino župa*) were established. In that period, individual wine production was neglected, which leads to the interruption of the production tradition within family farms. The main goal of restructuring agriculture follows the old requirements in the field regarding the transformation and modernization of the agricultural sector and food industry (Vasile et al., 2017). After what was perhaps the most difficult period of crisis in the history of Serbian viticulture, towards the end of the XX century, which saw the clearings of plots, the disappearance of large vineyard and winery complexes, an altogether dismal state, viticulture and winemaking in Serbia experienced important transformations, modernization and an overall positive forward movement. This represented a significant step towards nearing European standards and the practices of countries with good results in this area (Ivanišević et al., 2015). Today in Serbia, the revival in viticulture was instigated owing to the interest and initiative of winoholics and enthusiasts. An intensive growth in new vine plots can be noticed, utilizing contemporary technologies of artificial intelligence in the processes of growth, processing vine, and producing grapes. It is characterized by the introduction of high quality, selected and certified plots with the introduction of organic growth of grapes and production of wine (Jakšić et al., 2015). Also, economic efficiency is slightly higher in organic system compared to conventional (Vasile et al., 2015).

Bearing in mind the favorable geographical position and climate conditions, as well as the effects of topographic factors, terrain inclination and soil composition specific to Serbian spaces, the possibilities for viticulture and winemaking are broad. Three vineyard regions were established in the vineyard regionalization of territories in Serbia (the Vojvodina region, the region of Central Serbia and the region of Kosovo and Metohija), within which there are 22 sub-regions with 77 vineyards in several vineyard oases (Jakšić et al., 2019).

Wines from the spaces of the New World[3] emerged into the world market in the 1990s with acceptable pricing (Vlahović et al., 2017), but also satisfying the expectations of consumers in the younger population. Simultaneously, an initiative with the aim of defending the culture and tradition of producing and consuming wine were started in the countries which are traditionally the greatest European producers of wine. The instigators of the initiative are small/family wineries, and their aim was to stop globalization in wine production, and also revive the practice of wine consumption which was fully suppressed in certain parts of Europe along with modernization in food preparation (Darnay, 2016).

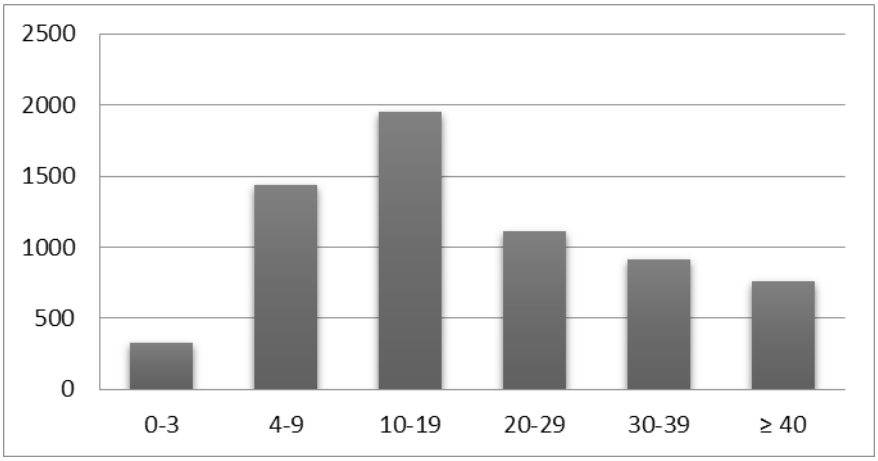
According to on-line data from the International Organisation of Vine and Wine in the year 2017 in the world 7,425,122 ha of soil was covered in vine plantations, and in the year 2018 the area covered was 7,445,129 ha. In Europe, whose spaces contain the countries which are numbered among the greater winemakers in the world (Italy,

3 The countries of the New World include the countries of North and South America, Australia, New Zealand, South Africa

France, Spain) in the year 2017 there were 3,684,895 ha of soil under vineyards, and in the year 2018 the area covered was 3,690,813 ha. These data indicate an increase in activities to advance winemaking as a commercial branch on the global level.

In Serbia, according to the data from the Statistical Yearlybook of the Statistical Office of the Republic of Serbia for 2018, there was an increase in space units under vines, or put more precisely, in 2017 there were 21,201 ha, and in 2018 there were 21,328 ha. The age structure of vineyards according to the data from the Vineyard Register is such that vineyards aged between 10 and 19 years dominate (30%), followed by vineyards aged 4 to 9 years (22.10%). Vineyards aged 20 to 29 years account for 17.04%, 30 to 39 years 14.23%, over 40 years of age 11.75%, and the smallest amount of space, 5.09%, is covered by vineyards up to 3 years of age (Figure 1) (Jakšić et al., 2019).

Figure 1. Vineyards according to age groups of plots



Source: Jakšić et al., 2019, p. 103.

Although there is great potential for viticulture, the economic crisis and loss of market during the 1990s led to a great reduction in the areas covered in vines compared to the preceding period. According to the Strategy for Agriculture and Rural Development of the Republic of Serbia for the period 2014-2024 the areas under vineyards are characterized by a significant fragmentation of allotments, as the average size of vineyards in Serbia is only 0.28 ha, and this fragmented structure of the plots considerably increases the overall expenses of grape production (Gazette of the RS 85/2014, p.12).

The Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia has announced a public call for incentives for investments in the wine production sector for 2020. The subject of incentives in accordance with the Ordinance and the Public Invitation are eligible investments and costs in the wine production sector related to construction winery facilities, general cost and/or purchase of new equipment, devices and machines, in operation wine production. The maximum amounts of incentives for each type of incentive are:

1) for investments in the construction of winery facilities - 30,000,000 RSD;

2) for the purchase of new equipment, devices and machines in the function of wine production - 10,000,000 RSD;

3) for general expenses - 1,000,000 RSD.

The highest total amount of incentives that an incentive user can receive in one calendar year is 41,000,000 RSD (www.uap.gov.rs).

The Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia initiated in 2012 on the basis of a competition in keeping with the Law on Wine the formation of the Vineyard Register, which was created in cooperation with the Center for Viticulture and Winemaking from Niš. The Vineyard Register keeps a record of the areas of vineyards, their position, and the strains which are represented within these areas, as according to the Law on Wine and its bylaws all grape producers using allotments larger than 10 acres (but also smaller ones if they put their grapes on the market) are obliged to enroll in the Vineyard Register.

Also in accordance with the Law on Wine, an important database is the Winery Register, within which data is kept on producers, technological equipment that wineries possess for processing and bottling of wine, the production vessels, the raw materials and end products, the laboratory instruments, the volume of annual grape processing and wine production, the number of bottles and product sales. According to the Law on Wine and Rulebook on the Contents and Keeping of the Winery Register, it is mandatory to keep records of all the natural and legal persons, or entrepreneurs who have 10 or more acres of vineyards.

Wine tourism as a stimulating business activity

Along with wine production, wineries today also direct attention to the development of wine tourism, and vineyards give to a space a specific identity, which is important in the analysis of authenticity of tourist offers of different destinations (Štetić, Cvijanović, Šimičević, 2018). Wine tourism as a set of organized activities is based upon visits to vineyards and wineries, as well as wine-themed exhibitions and manifestations organized for recreational purposes (Johnson, 1997). Tourists join this type of travel tours, therefore, out of a desire to taste wines, to attain new knowledge about wine, to learn how best to combine food and wine, to enjoy rural areas, etc. (Milićević, Štetić, 2017). In this way, guests acquaint themselves with wine culture, a synergy is formed between the locality, gastronomy and experiences of visitors (Štetić, Cvijanović, Šimičević, 2018), and wine becomes a traditional resource forming the authenticity of a destination to the stage of forming and branding a tourist region with the aim of having it recognized in the tourist market, e.g. the regions of Bordeaux, Burgundy, Tuscany, Balaton, Rioja.

Bearing in mind that wine is the motivating factor here it is interesting to point out that moderate consumption of wine has numerous health benefits when analyzing its nutritious, hygienic, prophylactic, and medicinal value (Cindrić, 1990), with the

important notion that wine is an integral part of a meal (Cvijanović et al., 2018) which makes the importance of wine as a food item in tourism (Pivac, 2012) specific and contributes to an increased demand in the tourist market, in terms of special interests of users of tourist services with the aim of valorizing wine tourism.

Wine tourism, education about wines and wineries are not merely a field of interest for wine connoisseurs, but also represent a segment of enriching the tourist offer in the rural spaces, and they should be viewed as such. Services are associated with wine routes, expanding their offer by including small wine producer (Štetić, Cvijanović, Šimičević, 2018). According to Pivac (2012) wine routes have as their aim representation of a region with significant wine production, with organized wine tasting. On the territory of Serbia a total of nine wine routes have been formed: Palić, Fruška Gora, Vršac, Šumadija, Smederevo-Beograd, Negotin, Župa, Niš-Kragujevac and Kosovo and Metohija (Stojković, Milićević, 2020).

Bearing in mind that research has shown that there is a linear relationship between the application of a marketing concept and actualized business profit, and that the application of a specific marketing concept enables a higher level of returns on investments (Cvijanović, 2016), this statement unambiguously points us towards the position that the choice of appropriate marketing concepts is important for wineries so they can position themselves in the market and achieve better business results.

Introduction of the BEX business excellence success model

Business excellence success models are used to assess business performance of companies, business weaknesses, as well as the negative trend that can cause business crises. One of the business performance success models is the BEX model. When creating the BEX model Belak and Aljinović-Barać (2008) were guided by application of logical selection and criteria of compatibility and sustainability in business representation, based on data from 1600 financial reports of Croatian companies which had done business on the Croatian capital market in the period between 2000 and 2008. The model envisaged is relatively simple to use. Namely, out of a number of data and calculated indicators 14 indicators were selected, out of which 5 indicators come from the group of financial performances, 5 are structural indicators and 4 are indicators of investment efficiency of stockholders on the capital market.

The BEX model has the following structure: (Belak, Aljinović-Barać, 2008)

$$BEX = 0{,}388ex1 + 0{,}579ex2 + 0{,}153ex3 + 0{,}316ex4$$

The indicators encompassed by the model are the following:

ex1 – profitability ($\frac{EBIT}{Total\ Assets}$),

ex2 – value creation ($\frac{Net\ Business\ Profit}{Equity} \times Price$),

ex3 – liquidity ($\frac{Working\ Capital}{Total\ Assets}$),

ex4 – financial strength ($\frac{5 \times EBITDA}{Total\ Liabilities}$).

Table 1. A summary of values for the BEX index of business excellence

Bex index	Business excellence BEX ranking
>1,0	Good company
0 – 1	Necessary business upgrades
< 0	Threatened existence

Source: Adapted from Belak, Aljinović-Barać, 2008

After calculating the obtained values of the BEX index and determining the business excellence ranking according to the categories in Table 1, it is necessary to specify the situational analysis and give a future business prognosis of the analyzed companies based on the ranking by applying the information in Table 2.

Table 2. Ranking business excellence according to the BEX index and future prognosis

BEX index	Business excellence rang	Future forecast
Higher than 6.01 – 4 years consecutively	World class	Company operates with top results which is also to be expected for the next 4 years, if management continues with upgrades
Higher than 6.01	World class candidate	Company has excellent operation and this is to be expected over the next three years, if management continues with upgrades.
4,01 - 6,00	Excellent	Company has excellent operation and this is to be expected over three years, if management continues with upgrades
2,01 - 4,00	Very good	Company has very good operation and this is to be expected over the next two years if management continues with upgrades.
1,01 - 2,00	Good	Company has good operation and it can be expected only if upgrades are made
0,00 - 1,00	Limited area between good and poor	Business excellence is positive, but not satisfactory. It is necessary to make serious upgrades
Lower than 0 (negative)	Poor	Existence is threatened. Urgent restructuring and upgrading is needed, otherwise poor business operations will continue to threaten the survival (probability is over 90%)

Source: Adapted from Belak, Aljinović-Barać, 2008

Materials and methods

The aim of the research in this paper is to examine the business excellence of wineries in Serbia, wineries that deal with wine tourism (tastings, tours), via an application of the BEX model while presenting the assessment of the business success on the basis of the defined theoretical framework. The research success evaluation is based on data gathered by applying the "desk research" method from financial reports in the business of 50 commercial subjects from Serbia whose industrial classification code is 1102 – Producing wine from grapes. The criterion in forming the sample was that the selected economic entities are engaged in the production of wine exclusively, without the production of juices and other types of alcoholic beverages (brandy, cognac), as well as that the activities of wine tourism within their business are represented. During the Wine Fair in Belgrade in February 2020, the exhibitors/wineries were asked whether they organized wine tourism activities and the obtained data were implemented in the process of forming a sample of wineries which are the subject of analysis in this paper. Financial reports for the business years 2017 and 2018 have been accessed at the website of the Agency for Commercial Registers (APR). The financial reports accessed formed a database of key data/indicators, based on which a calculation of the BEX model of business excellence was then done. The results obtained were explicated by way of applying the comparative method and correlation method, and individual values presented in the form of tables.

At the same time, an analysis of the website content of 50 sampled wineries was done to see if the wineries promote wine tourism activities online. Then, a comparison and statistical analysis of the correlation (ANOVA) of the obtained BEX values index and the existence of promotional activities of wine tourism on web pages of the analyzed sample of wineries were performed.

Research results

Based on the collected data, after calculating business excellence by applying the BEX model, Table 3 was formed within which is given a summary of values obtained for the BEX index of business excellence of winemakers for the business years 2017 and 2018, individually, per each company from the sample.

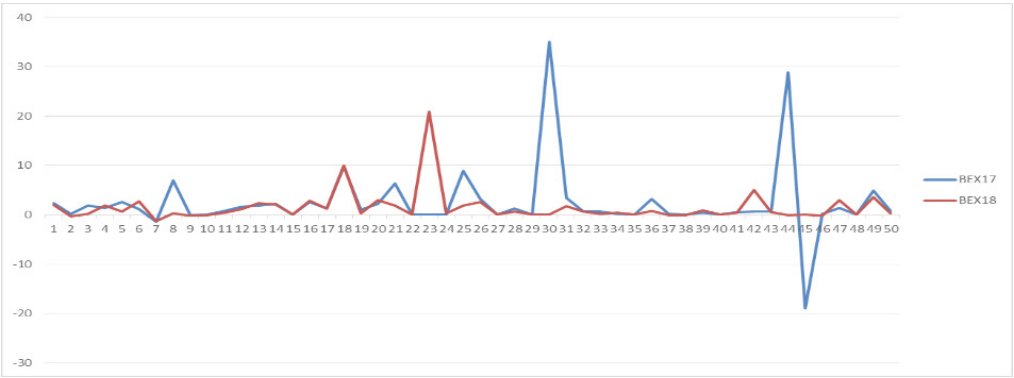
Table 3. Summary of values for the BEX index of business excellence of wineries individually for the years 2017 and 2018

Winery	BEX17	BEX17 ranking	BEX18	BEX18 ranking
1	2.3401985	Very good	1.9973244	Good
2	0.1525071	Bordering area	-0.2919228	Poor
3	1.9230744	Good	0.2133787	Bordering area
4	1.3939688	Good	1.9083714	Good
5	2.6208003	Very good	0.6893914	Bordering area
6	1.0844546	Good	2.6694332	Very good

Winery	BEX17	BEX17 ranking	BEX18	BEX18 ranking
7	-1.4277721	Poor	-1.3070359	Poor
8	6.9108855	World class candidate	0.342561	Bordering area
9	-0.1030928	Poor	-0.1610141	Poor
10	0.0236522	Bordering area	-0.0230706	Poor
11	0.7957732	Bordering area	0.4242903	Bordering area
12	1.669929	Good	1.1937852	Good
13	1.8564792	Good	2.3167442	Very good
14	2.2052865	Very good	2.0523132	Very good
15	0.0562429	Bordering area	0.0566933	Bordering area
16	2.6355599	Very good	2.8355651	Very good
17	1.2950491	Good	1.2443799	Good
18	9.7543126	World class candidate	9.9979794	World class candidate
19	1.0647056	Good	0.2815473	Bordering area
20	2.2438761	Very good	2.969169	Very good
21	6.3012746	World class candidate	1.9276741	Good
22	0	No rating	0	No rating
23	0	No rating	20.872309	World class candidate
24	0.0031246	Bordering area	0.2965015	Bordering area
25	8.9149023	World class candidate	1.8834388	Good
26	3.1654317	Very good	2.5999209	Very good
27	0	No rating	0	No rating
28	1.2409572	Good	0.6539004	Bordering area
29	0	No rating	0	No rating
30	35.067258	World class candidate	-0.0017223	Poor
31	3.5036087	Very good	1.7071471	Good
32	0.7163724	Bordering area	0.6063955	Bordering area
33	0.657903	Bordering area	0.1548	Bordering area
34	0.138443	Bordering area	0.4684103	Bordering area
35	0	No rating	0	No rating
36	3.1810438	Very good	0.7696727	Bordering area
37	0.1211009	Bordering area	-0.0582702	Poor
38	-0.0052605	Poor	-0.0166373	Poor
39	0.4170116	Bordering area	0.8558957	Bordering area
40	0	No rating	0	No rating
41	0.5361253	Bordering area	0.4772747	Bordering area
42	0.6156597	Bordering area	5.041973	Excellent
43	0.6385622	Bordering area	0.5444125	Bordering area
44	28.8549	World class candidate	-0.0227508	Poor
45	-18.967693	Poor	0	No rating
46	0.1243977	Bordering area	-0.1672299	Poor
47	1.3579661	Good	2.9941766	Very good
48	0	No rating	0	No rating
49	4.9165456	Excellent	3.617173	Very good
50	0.7639495	Bordering area	0.28924	Bordering area

Source: Calculation by the authors

Figure 2.Graph of BEX index ranking fluctuation for years 2017 and 2018 per companies in the sample



Source: Calculation by the authors

The task was to complete a unified analysis of the sample of companies producing wine in Serbia and the results obtained are given in Table 4.

Table 4. Results of the BEX index of business excellence calculated together for the sample of wineries

	2017	**2018**
ex1 profitability	0.04089	0.03902
ex2 creating value	4.39756	2.40437
ex3 liquidity	-0.96061	-0.10750
ex4 financial strength	1.84460	0.87502
BEX	**2.66595**	**1.50984**
Rang BEX	Very good	Good

Source: Calculation by the authors

The results obtained enable us to perceive changes that occurred in the business of wineries in the business years 2017 and 2018, based on an analysis of the data from financial reports. Namely, in the analysis of the values for ranking in the BEX model for the year 2017 the value of the BEX index obtained was 2.66595, and in accordance with the data on the business success of analyzed companies the business excellence ranking is among companies with very good business, with the recommendation for future business to have the management try to keep this level of business while striving to advance business processes, and thus also the indicator values for the following years.

Analyzing the values for BEX model rankings for the year 2018 of the sample of companies producing wine, the obtained value of the index 1.50984 indicates that the business of companies is classified in the category of good values. Bearing in mind the obtained result, the suggestion is that advancement in business if desirable with the aim of maintaining or increasing the level of business excellence.

Observing and analyzing the values in financial reports of the analyzed companies it was noticed that several companies have investment activities in their business, which are mostly realized through borrowed means. Some of them had an increase in long-term obligations, and even business year net results in the form of Net Losses. Such values have, in a number of analyzed companies, caused a business excellence ranking in the Bordering area. At the same time, a smaller number of companies have a business excellence ranking at the Excellent and World class levels, and their business and values of indicators can serve as excellent examples of doing business.

According to Njegovan (2016) financial liquidity is a necessity from the aspect of doing business and survival of any agricultural estate, and bearing in mind the seasonal character of the business, non-simultaneous investments into production and problems with collecting payments it becomes clear that financial liquidity is achieved by going into debt or by diversifying business activities. The problem of liquidity in wineries occurs due to the lack of continuous sales and collection of receivables. Namely, wineries have certain problems with wine placement: a) due to the large amount of foreign wines with low selling prices on the market, b) due to the still low awareness of the population for wine consumption, c) still undeveloped export of Serbian wines, e) monopoly conditions of sales channels ie. conditionality of product placement in retail chains that often expect a long deadline to settle their obligations. This situation causes a limited inflow of funds in continuity, which causes the impossibility of settling fixed costs in regular operations, as well as settling receivables.

Analyzing the structure of the BEX model of the entire sample of wineries in Table 4 it is possible to perceive a major problem with liquidity(negative values of liquidity indicators in 2017 at -0.96061, and in 2018 at -0.10750), and this is confirmed in data on the indebtedness of companies. At the same time, the values of profitability and financial power indicators are in the rank of the bordering area, and the indicators pointing towards the potential to create value are ranked among very good results (in 2017 at 4.397756, and in 2018 at 2.40437). One of the reasons for middling business results can certainly be found in the natural resources upon which the business of this commercial branch is based, and that is the amount of grape yield for each year/season, which also determines the amount of wine produced.

Table 5. Analysis of BEX index fluctuations in sampled wineries and amounts of wine produced in 2017 and 2018 in Serbia

	2017	2018
BEX Index	2.66595	1.50984
Vine product (ha)	736,000	665,000

Source: Calculation by the authors

Therefore, is we take into account the obtained values of the BEX index of business excellence for the years 2017 and 2018 and the presented data on amounts of produced wine in the analyzed years it is possible to notice a correlation between the values of amount of produced wine and indicators of business excellence in the business of sampled wineries in Serbia.

After the analysis of BEX index, a "desk research" analysis of 50 sampled wineries' websites was performed in order to detect information on the promotion of wine tourism activities (tasting, tour of wineries). Of all the analyzed samples, 20 wineries promote activities included in wine tourism on their websites. Table 6 provides a comparative overview of the BEX index rank and information on wine tourism on the wineries' websites.

Table 6. Comparative overview of the BEX index rank and information on wine tourism on the wineries' website

Winery	BEX17	Rank BEX17	wine tourism promotion on website	BEX18	Rank BEX18	wine tourism promotion on website
1	2.3401985	Very good	yes	1.9973244	Good	yes
2	0.1525071	Bordering area	no	-0.2919228	Poor	no
3	1.9230744	Good	yes	0.2133787	Bordering area	yes
4	1.3939688	Good	no	1.9083714	Good	no
5	2.6208003	Very good	no	0.6893914	Bordering area	no
6	1.0844546	Good	yes	2.6694332	Very good	yes
7	-1.4277721	Poor	no	-1.3070359	Poor	no
8	6.9108855	World class candidate	no	0.342561	Bordering area	no
9	-0.1030928	Poor	no	-0.1610141	Poor	no
10	0.0236522	Bordering area	yes	-0.0230706	Poor	yes
11	0.7957732	Bordering area	no	0.4242903	Bordering area	no
12	1.669929	Good	no	1.1937852	Good	no
13	1.8564792	Good	yes	2.3167442	Very good	yes
14	2.2052865	Very good	no	2.0523132	Very good	no
15	0.0562429	Bordering area	yes	0.0566933	Bordering area	yes
16	2.6355599	Very good	yes	2.8355651	Very good	yes
17	1.2950491	Good	no	1.2443799	Good	no
18	9.7543126	World class candidate	no	9.9979794	World class candidate	no
19	1.0647056	Good	yes	0.2815473	Bordering area	yes
20	2.2438761	Very good	no	2.969169	Very good	no
21	6.3012746	World class candidate	no	1.9276741	Good	no
22	0	No rating	no	0	No rating	no
23	0	No rating	no	20.872309	World class candidate	no

Winery	BEX17	Rank BEX17	wine tourism promotion on website	BEX18	Rank BEX18	wine tourism promotion on website
24	0.0031246	Bordering area	no	0.2965015	Bordering area	no
25	8.9149023	World class candidate	yes	1.8834388	Good	yes
26	3.1654317	Very good	yes	2.5999209	Very good	yes
27	0	No rating	yes	0	No rating	yes
28	1.2409572	Good	yes	0.6539004	Bordering area	yes
29	0	No rating	yes	0	No rating	yes
30	35.067258	World class candidate	no	-0.0017223	Poor	no
31	3.5036087	Very good	no	1.7071471	Good	no
32	0.7163724	Bordering area	yes	0.6063955	Bordering area	yes
33	0.657903	Bordering area	no	0.1548	Bordering area	no
34	0.138443	Bordering area	yes	0.4684103	Bordering area	yes
35	0	No rating	no	0	No rating	no
36	3.1810438	Very good	yes	0.7696727	Bordering area	yes
37	0.1211009	Bordering area	no	-0.0582702	Poor	no
38	-0.0052605	Poor	no	-0.0166373	Poor	no
39	0.4170116	Bordering area	no	0.8558957	Bordering area	no
40	0	No rating	no	0	No rating	no
41	0.5361253	Bordering area	yes	0.4772747	Bordering area	yes
42	0.6156597	Bordering area	no	5.041973	Excellent	no
43	0.6385622	Bordering area	no	0.5444125	Bordering area	no
44	28.8549	World class candidate	yes	-0.0227508	Poor	yes
45	-18.967693	Poor	no	0	No rating	no
46	0.1243977	Bordering area	no	-0.1672299	Poor	no
47	1.3579661	Good	no	2.9941766	Very good	no
48	0	No rating	yes	0	No rating	yes
49	4.9165456	Excellent	no	3.617173	Very good	no
50	0.7639495	Bordering area	no	0.28924	Bordering area	no

Source: Calculation by the authors

Data on business success ranking and promotion of wine tourism on the wineries' websites were processed through the statistical package SPSS 22.0 by calculating the correlation coefficient and the ANOVA statistical method. Using the obtained results, the situational analysis of the impact of wine tourism activities promotion and business success was considered.

Within the value analysis, BEX model is defined as a dependent variable, and an independent variable is the data whether the information of wine tourism promotion is posted on the wineries' websites. When testing the existence of the mentioned information on wine tourism activities on the websites for 2018, the obtained results indicate that the value of R is 0.134, which means that it is an extremely small correlation (Table 7).

Table 7. Model Summary for BEX model 2018

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.134[a]	.018	-.002	3.31696
a. Predictors: (Constant), VAR00001				

Source: Autors adapted from statistical package SPSS 22.0

Table 8. ANOVA BEX model 2018 and information about wine tourism promotion on the wineries' websites

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.682	1	9.682	.880	.353[b]
Residual	528.106	48	11.002		
Total	537.788	49			
a. Dependent Variable: VAR00003					
b. Predictors: (Constant), VAR00001					

Source: Autors adapted from statistical package SPSS 22.0

Also, the outcome of the F test is not significant (Table 8) because Sig is 0.880 (more than 0.05), so we can conclude that the data from the websites on activities related to wine tourism realized in the analyzed wineries does not affect business success in 2018.

Values for 2017 indicate that the value of R is 0.069, which means that there is no correlation (Table 9). The F-test is not significant because Sig is 0.229 (Table 10).

Table 9. Model Summary for BEX index 2017

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.069[a]	.005	-.016	7.20413
a. Predictors: (Constant), VAR00001				

Source: Autors adapted from statistical package SPSS 22.0

Table 10. ANOVA BEX model 2017 and information about wine tourism promotion on the wineries' websites

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	11.908	1	11.908	.229	.634[b]
Residual	2491.175	48	51.899		
Total	2503.083	49			
a. Dependent Variable: VAR00002					
b. Predictors: (Constant), VAR00001					

Source: Autors adapted from statistical package SPSS 22.0

Bearing in mind that business success of some analyzed wineries is in the World class rank without promoting wine tourism activities on the website, and that the results of ANOVA analysis indicate no correlation, the research thesis that wineries which promote wine tourism activities on their websites have a better rank of business performance in line with the values of BEX model is not supported.

Conclusion

Two criteria were used when forming the sample of wineries whose business results were analyzed, that wineries are engaged in wine production as their only final product (activity code 1102 - Production of wine from grapes), and that they are engaged in wine tourism, which is confirmed by direct contact with wineries' representatives during the Wine Fair in Belgrade.

Bearing in mind the obtained results of the BEX index after processing and analysis of the business data of wineries, the suggestion is that advancement in business is desirable in order to maintain or increase the degree of business success. In accordance with the decrease in produced amounts of wine it is possible to emphasize the constantly high expenses of investing into and maintaining vineyards, as well as the equipment and technological processes in wine production, which characterize this commercial branch. Simultaneously, it is very significant to point out the seasonal nature of the business, in terms of grape processing and winemaking, and these facts contribute to an overall encumbrance in planning and conducting business successfully.

Therefore, analyzing the obtained data and information and taking into account the fragmentation of allotments i.e. the large number of small producers, it is necessary to point out the importance of adopting the Strategy for the Development of Viticulture and Winemaking, as a significant document forming the basis for the development of the mentioned commercial branch. It is important to point out the potentials in the development of wine tourism on the territory of Serbia bearing in mind the current international thematic tourist product i.e. the cultural route of the European Council – The Roman Emperors and Danube Wine Route (since 2015), the wine routes included in this international project, as well as the other vineyards throughout Serbia. In accordance with the potentials which Serbia possesses, excellent spatial and climate conditions for successful viticultural endeavors, the suggestion is that autochthonous brands should be strengthened from the aspect of

increasing the market share and export, and some research indicates that consumers see the wine brand, and not the price tag, as the decisive factor in their choice (Kuzmanović, Makajić-Nikolić, 2020).

Considering the results obtained after research and analysis, it was noticed that some wineries in the sample have a World class rank of business success and that they implement wine tourism activities without promoting them on their websites.

These wineries generate excellent business revenues from wine production/sales, but also from tourist visits in accordance with wine tourism activities as a result of the quality and trust that wine consumers have. Tradition and quality remain recognizable when it comes to choosing wine tourists.

The results of this research have a scientific and practical contribution. The scientific contribution is reflected in the unification and application of the results of research conducted in the process of analysis of the promotion of wine tourism activities on the websites of wineries. A significant scientific contribution is the analysis that was conducted for the first time in the assessment of business success of wineries in Serbia. Namely, bearing in mind that wineries are in a state of constant pressure in the processes of adapting to market conditions, minimizing costs and increasing profitability, the BEX model can predict difficulties in winery operations, and monitoring the value of indicators can avoid potential business risks. The practical contribution is reflected in the possibility of using the research results by wineries in Serbia that deal with wine tourism, but do not promote it on their websites. In addition, the practical contribution is reflected in the possibility of using the research results in order to create a Strategy for the development of wine tourism in Serbia.

Future research could analyze whether additional wine tourism promotional activities on the wineries' websites contribute to the increase in the number of visitors, as well as to the improvement of business results. In this way, winemakers would reach their products' buyers faster at the place of production and thus minimize the time of sale and charging for wine. What is more, a new research could be conducted on the business performance of wineries that do not develop wine tourism. The obtained results could be compared with the BEX index results of wineries that develop wine tourism so that new strategic decisions could be made.

Conflict of interests

The authors declare no conflict of interest.

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ECONOMIC FACTORS OF RURAL AREA DEVELOPMENT OF THE REGION, FINANCIAL SOURCES AND HUMAN RESOURCES

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ABSTRACT

The complexity of borders and border area in terms of European Union, cohesion policy, implementation of cross-border program 2007-2013 in urban and rural areas of Hungary and Croatia, monitoring the impact of invested funds and their comprehensiveness, the attitude of beneficiaries of infrastructural and human resources development projects are discussed in this paper. All in the light of given possibilities and untapped opportunities that can bring significant benefits to this area. The primary survey is conducted in the observed area after the implementation of all approved cross-border projects. Besides, available data sources and implemented research in the cross-border area of Hungary and Croatia are also discussed. The paper seeks to contribute to the discourse on the subject of monitoring the overall impact of the implemented activities in the cross-border area because there are no similar studies that comprehensively approach this complex problem for areas of cross-border cooperation in the European Union.

Introduction

Borders are complex phenomena. They are multifaceted, multilevel, interdisciplinary institutions and processes transecting spaces in not only administrative and geopolitical but also cultural, economic and social terms. Also, borders are inherently ambiguous, paradoxical and contradictory in nature. They either confirm differences or disrupt units that belong together by defining, classifying, communicating and controlling

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geopolitical EU aspects but also sociocultural, economic and biophysical aspects, processes and power relations within the Union (Haselsberger, 2014; Anderson et al., 2003). Descriptions as "bridge", "wall", "tunnel", "opportunity", "threat", "borderless", "re-bordering", "de-bordering", "part barriers, part bridges", are only some of the interpretations given as terms concerning borders and border regions, indicating that this discussion has only just begun (O'Dowd, 2002a; Topaloglou et al., 2005) and that their role and definition is inevitably changing (Gualini, 2003). Boundaries are becoming more permeable to the movement of goods and people, and diffusion of ideas and transactions (Newman, 2013). As a result of these processes and the socio-economic dynamics generated, border regions have been put in a state of flux and their socio-economic role significance and power relations are transforming (Topaloglou et al., 2005, Popescu, 2008; Jakubowski, 2018). Or, more concisely „they are shifting under established political institutions, practices, and concepts" (Anderson, 1996). These developments have encouraged a limited but widespread revitalisation of research on borders across a range of social science disciplines (O'Dowd, 2002b), increasingly sociologists, anthropologists and political scientists that use spatial categories in a metaphoric/concrete sense when reflecting the increasingly complex spatiality of the world (Paasi, 2002). Over the last decade, the conventional cartography of nation-states delineated by hard borders has been challenged by the emergence of new cross-border co-operation (CBC) patterns (Boman, Berg, 2007). The changing function of boundaries does not by definition mean a „borderless" world. Whereas in the past border regions were primarily seen as marginal areas, because of the many administrative, political and cultural obstacles faced by local populations and institutions (Nelles, Walther, 2011), also not to disregard the widening disparities in the development levels of the 'nucleus' and the 'periphery'(Anđelković-Stoilković et al., 2018), border regions have gained a stronger (Jusić, Obradović, 2019) and a more prominent place in the territorial cooperation discussion due to funding through various EU programs, which create opportunities for cross-border organizations to attract resources and funding (Medeiros, 2015). In this way, through cooperation, areas across the border can find a common answer to a mutual issue (García-Álvarez, Trillo-Santamaría, 2013). The cohesion policy of the European Union (EU) is directed primarily at the enhancement of the economic, social and territorial cohesion, through reducing disparities in the development levels of the European regions, mainly by supporting the underprivileged areas which are peripheral in the socioeconomic sense and mostly rural. If we look back, in the years 1989-2013 the cohesion policy towards border areas evolved noticeably, both with respect to its objectives and financial means allocated to it. However, it should be remembered that the financial resources assigned to cross-border cooperation are only a small part of the cohesion policy so their capacities are limited (Miszczuk, Jakubowski, 2015), but it has contributed to greater cohesion and integration by reducing the impact of national, economic and cultural barriers (Mairate, 2006). The reason is that funds can be awarded only to organisations in a border area and should directly tackle and resolve common issues which makes it highly important for that CBC region. Also, border regions are very often considered periphery or are mainly

rural areas. Predominantly rural regions occupy more than half of the EU territory (52%), include 23% of the EU population and account for 21% of the employment (EC: DG AGRI, 2013), so it is clear that territorial rural development is important in many aspects and is highly important for the future of the Union. Especially after the Eastern Enlargement (Bryden, 2002; Vidovic et al., 2011) and the fact that the new Member States have increased significantly following their accession to the EU (Tevdovski, 2012), so it is out of utmost importance to continue and to build upon further on these positive impacts. The main idea behind the territorial cohesion concept is to contribute to European sustainable development and competitiveness and to turn Europe's „diversity into an asset for all places, thus ensuring a harmonious and balanced territorial development and contributing to a sustainable Europe" (ESPON, 2011). What is missing is a more systematic take on integration processes in border regions. To date, the literature has mainly concentrated on case studies, conceptual debates, or a small scale research that involve a small number of cross-border cooperation's (Michalek, Zarnekow, 2012; ESPON, 2020) with few illustrative examples, besides series of guidelines for the impacts assessment procedures (EC, 2005) and ESPON (ESPON, 2013) that has produced series of models. Some of them are TEQUILA, TEQUILA 2, EATIA, TERCO or TARGET_TIA. They intend to assess the efficiency of a given European policy to improve territorial cohesion, encompassing impacts across regions by applying a multi-vector approach on predefined territorial cohesion dimensions (COTER, 2020). Digital transformation is present in many sectors, but it has not been embraced fully (Vojinović et al., 2017; Zelenović, Vojinović, 2017) in the sense that available digital data still are not being used to add true value to lives and for the understanding the processes to improve service, product or in this situation, usage of a vast amount of invested funds. Still, territorial impacts of policies often suffer from a lack of awareness. In contrast to mandatory assessments, for various actions from policy to project development, a "territorial impact assessment" is not mandated by any EU policy (COTER, 2020). ESPON only investigates the possible and/or potential territorial impact of policies and not the direct and indirect impact on policies and governance systems and practices within the Member States (Zonneveld, Waterhout, 2009), nor has the necessary depth of reach of a particular effect at all observed levels (personal, local, regional or national). Therefore, there is a need for more comparative qualitative and quantitative studies focusing on the drivers and barriers of cross-border integration processes (Makkonen, Williams, 2016; Hansen, 1976), especially people, which could shed light on the actual effects of the undertaken actions in the short and long period for all included factors of an area. We need to analyze how they function to understand obstacles to cross-border cooperation, how networks of trust can be established, and how the democratic governance of cooperation might be achieved (Anderson et al., 2003).

In the case of Croatia, which is in the focus of this paper, highly dependency on borders is linked to its shape. Also, close to 80% of Croatia's land area is classified as predominantly rural (EU-27 average - 52%) with 56,5% of the total population (DG AGRI, 2013).

Physical terrain and political boundaries still matter, of course, but neither - and especially not political boundaries – matters as much as people preferences (Ohmae, 1995), their willingness to collaborate, to make the best use of all of the territorial assets in a coordinated and sustainable way (CEC, 2008), to learn through networking or solve common issues that is artificially split between two countries and have same obstacles, threats and opportunities. With this in mind, CBC activities can be defined as a series of project interventions to create better living conditions in general. In that sense, we can observe project management as a success factor for a wide range of activities and economic entities (Melecký, 2016).

Regarding the position of Croatia, cooperation was sporadic until the pre-accession period and had a somewhat slow pace, so these funds represent an open window and new platforms for joint development, by building new relations based on common interests and needs, investments in local public services and regional economic development for a more comprehensive growth of small rural areas in the border regions (Davey, 2003; Đokić, Sumpor, 2011). This is of great importance since regions with reduced infrastructural and human capital endowments have higher rates of long-term unemployment (Crescenzi et al., 2015) and are highly sensitive to any negative occurrences such as crisis and recovery takes much longer which will be shown in the presented data.

Even human resources and above stated should be highly ranked and investment in it should not be seen as less important than investment in infrastructure, despite much evidence indicating that human capital externalities and social increasing returns may be important together with their prominence in policy debates - little effort has been spent in investigating what underlies these phenomena (Acemoglu, 1996). The question of competent human resources who implement projects and the number of people in the CBC area that will be trained according to their interests are two very important fields that should be monitored, but it is also rarely even mentioned by the scholars. One study of the sustainability level of rural development in the EU countries for the 2000-2012 period showed that there are large disparities between the Member States regarding social development. The research pointed out that countries that joined the EU recently - Romania, Croatia, Poland and Lithuania – had the worst results (Đokić, 2019).

Within this paper, another question of human resources, those that work in a non-profit organisation or other similar forms will be examined. Mostly in the form of their preparedness and their position in regards to public body institutions and other institutions. We will look into gathered primary research data to examine if their usually very agile position as the „closest“ to local community members is used to the highest possible extent and in the most appropriate manner. Also, primary research obtained data will show partially the potential that was created for members of local communities, mostly their skills and competences through different trainings and educations, whose empowerment and active participation (Díaz-Puente et al., 2008) is much needed for appropriate usage of local space based on natural resources. Contribution to the discussion on rural development that was created in implemented CBC Hungary – Croatia 2007 – 2013 will be put in the context of already collected and presented data for this period and area (Eurobarometer, 2015; Eurostat, 2020).

The objective of the paper is to provide an insight into the created impact of allocated financial resources but with an accent on the effect that was not thoroughly examined nor approached in a more holistic manner so that created impact could be detected and issues approached.

The main aim is to present conducted primary research at the level of institutions (lead beneficiary and project partners), those who were in constant contact with the target group members but also to connect implemented research with results of a scarce research implemented in the cross-border area during the IPA CBC HU – CRO 2007 – 2013 or later.

Main results – Investment in a sustainable environment, tourism, and development of economic cooperation, infrastructure and common human capacities have a significant impact in the region which is seen from obtained results of the questionnaire but it has to be put in the context of the 2008 economic crisis in order to comment properly.

Materials and methods

The findings are part of the research that was conducted in 2018, (2018-04-01 – 2018-05-31). Collected data are from projects that were implemented along the south-western and southern border of Hungary (Zala, Somogy and Baranya County) and the northern and north-eastern border of the Republic of Croatia (Međimurje, Koprivnica-Križevci, Virovitica-Podravina, Osijek-Baranja, Varaždin, Bjelovar-Bilogora, Požega-Slavonia and Vukovar-Srijem County) (IPA CBC Programming document, 2013).

A questionnaire was used as a method. The survey was comprised of 38 questions (41 variables). The corrective method for this research was the interview method. Data were first analysed using descriptive statistics, then compared by using a t-test to determine the likelihood of correlation between variables. The paper shows obtained results on a personal, organisational and regional level.The respondents were project partners that implemented projects during the 7-year period from 2007 to 2013, in accordance with the n + 3 rule, meaning that answers were collected after the entire project was implemented together with the final report submitted and during the sustainability period of the implemented projects. Of the potential 170, 102 respondents participated, representing 358 institutions (their project partners) out of a total of 581 institutions that took part in the projects under the 3 conducted Calls.

Results and discussion

Out of the 102 received answers from organisations, 42 of them were from public sector institutions, educational and research institutions, 24 out of 102 were from regional and local authorities (counties, cities and municipalities), 22 were from regional development agencies and other business support institutions, 9 answers came from non-governmental organisations who were places in the same group with other civil associations, employers' associations, professional associations, trade unions, agricultural associations and cooperatives. 5 survey responses came from local, regional or state-owned companies.

Table 1. Contracted and reported budget by partner country

	Lead beneficiary	N	Mean	Std. Deviation	Std. Error Mean
Total contracted project budget (EUR)	CRO	35	685440,27	1150979,703	194551,079
	HU	67	397606,33	531558,320	64940,185
Total reported project budget (EUR)	CRO	35	640203,84	1084309,858	183281,818
	HU	67	353078,28	486014,603	59376,134
Share of the reported budget	CRO	35	,8993	,08634	,01459
	HU	67	,8754	,08716	,01065

Source: Authors' calculations

Project beneficiaries from Hungary were in a somewhat advantageous position since they started to utilize EU program funds before Croatia so we could expect a higher number of projects awarded to partnerships with the lead beneficiary being from Hungary. When it comes to funds that are awarded to each project we see that it is not the case. It even seems that awarded funds are much higher in the latter case. For that matter, we have tested it by Levene's Test for Equality of Variances, t-test which is shown in Table 2. After further examination (Sig. Value) we can conclude that differences do not exist and are not as seen in Table 1., where projects with lead beneficiary from Croatia side had an average of 685440,27 EUR per project and with lead beneficiary from Hungary 397606,33 EUR. Here we have a case of high deviation among projects.

Table 2. Levene's Test for Equality of Variances

		Levene's Test		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Total contracted budget (€)	Equal var. assumed	6,886	,010	1,729	100	,087	287833,933	166442,817
	Equal var. not assumed			1,403	41,732	,168	287833,933	205103,266
Total reported budget (€)	Equal var. assumed	7,753	,006	1,847	100	,068	287125,555	155463,284
	Equal var. not assumed			1,490	41,277	,144	287125,555	192659,674
Share of the reported budget (€)	Equal var. assumed	,132	,717	1,322	100	,189	,02396	,01812
	Equal var. not assumed			1,326	69,664	,189	,02396	,01807

Source: Authors' calculations

Several projects with lead beneficiary from Croatia were infrastructural with high budgets so it is an extreme. There are no substantial significant differences in the projects being led by any of the participating countries. Human resources in both countries are equally prepared with an appropriate set of skills and knowledge for project implementation under IPA CBC Hungary – Croatia 2007 – 2013 which is shown by the percentage of the implemented projects that did not differ much among countries.

Table 3. Correlation - contracted and reported funds and size of the partnership

		Share of reported budget	Number of partners
Share of reported budget	Pearson Correlation	1	-,007
	Sig. (2-tailed)		,943
	N	102	102
Number of partners	Pearson Correlation	-,007	1
	Sig. (2-tailed)	,943	
	N	102	102

Source: Authors' calculations

Partnerships with more partners were examined in Table 3. To test if partnerships with more partners had a better possibility of transferring knowledge among partners, deal with any unforeseen situations, have better insight since more points of view are available, deal better with common issues – meaning that their absorption of funds in terms of the ratio of contracted and reported funds would be higher. The value goes from, the maximum negative correlation (-1) to the maximum positive (+1), with Sig. value also having importance. In this case there is no correlation. This might be particularly important since it shows that all of the project partnerships, whether it consisted of a low or high number of partners from both sides of the border, were agile enough and had substantial human resources to deal with all common issues, one being also the 2008 financial crisis in Europe which has left its toll on the economy in both countries.

Table 4. Contracted and reported budget by project type

	Project type	N	Mean	Std. Deviation	Std. Error Mean
Total contracted project budget (€)	Infrastructure	12	1767199,07	1679093,507	484712,544
	Education	90	326929,39	376531,059	39689,859
Total reported project budget (€)	Infrastructure	12	1615244,90	1575858,514	454911,169
	Education	90	296449,34	363009,233	38264,533

Source: Authors' calculations

Table 4. depicts the ratio of infrastructural and educational projects but also the amount of funds that were intended per type of project in the 7 years of the IPA CBC program. During the IPA CBC HU - CRO 3 Calls were conducted, with an accent on two priorities - (1) Sustainable environment and tourism and (2) Development of economic cooperation and common human capacities. Among 102 projects that filled the survey we have had 12 projects (11,8%) with mostly infrastructure component and 90 of them (88,2%) being oriented mostly on education ("soft-skills"). The infrastructure

component, even there are fewer projects, is much higher per project. This amount, or better their effect after the 7 years of project implementation, will once again be examined in the following pages.

Table 5. Project type and the type of the organisation (Cross-tabulation)

Project type		Type of the organisation					Total
		Institution	Regional/local govt.	RDA	NGO	State/local govt. owned company	
Infrastructure	Count	4	4	2	0	2	12
	%	9,5%	16,7%	9,1%	0,0%	40,0%	11,8%
Education	Count	38	20	20	9	3	90
	%	90,5%	83,3%	90,9%	100,0%	60,0%	88,2%
Total	Count	42	24	22	9	5	102
	%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Source: Authors' calculations

In Table 5. A disproportion of projects implemented by institutions, regional development agencies (RDA), NGO sector and state/local government-owned companies in both types of projects is shown, which also influences on the human resources being in charge for projects meaning that the NGO sector, which is usually the most agile and can very rapidly answer to the specific need in the local community is not in the same position as other organisations. It is also a question of the organisation strength since it has to be proven and points are awarded for it, so the partnership was usually led by the strongest organisation with the most stable finances which are usually state-funded institutions, budgetary users.

Table 6. Number of participants in educational activities

		Projects	Projects with the education component
N	Valid	102	86
	Missing	0	16
Mean			263,67
Median			60,00

Source: Authors' calculations

Calculation in Table 6. gives insight into educational activities and their distribution. Answers ranged from 3 to 10000 persons in the 86 projects that reported the number of participants. The average is 264 people, but the median indicator is more suitable in this case, meaning that within 50% of the projects 59 or fewer participants were educated and the other 50% of the project educated 61 and more participants. When we put in perspective the percentages that were awarded to each project with a strong educational component and also the amounts of funds that were awarded to "soft-skills" projects we can see that the funds allocated for actual activities which aimed at raising skills, knowledge and expertise of the human resources in CBC area, both target group members and final beneficiaries, reached substantial amount. Together with

infrastructural projects the first impulse was supposed to move on so that organisations in the cross-border could move forward in their quest to tackle common issues within the two priorities and beyond.

Table 7. Usage of the organisation knowledge and skills for the development of new projects

	Frequency	Percent	Valid Percent	Cumulative Percent
I disagree	2	2,0	2,0	2,0
Neither agree nor disagree	22	21,6	21,6	23,5
I agree	44	43,1	43,1	66,7
I strongly agree	34	33,3	33,3	100,0
Total	102	100,0	100,0	

Source: Authors' calculations

Together with the values from Table 7. that clearly state organisational human resource readiness to use acquired knowledge and skills, meaning also networks created in the CBC area, in order to build upon them and implement further activities in the local communities. In other programs, the sustainability period is thoroughly checked but for this program it was not actually monitored by the contracting body, so collected answers from project implementers (33,3% strongly agree and 43,1% agree with the statement) have an even higher value and show actual interest and willingness to work together in the future on mutual challenges. Several weak spots were detected during our research that were not detected prior to this research nor was it highlighted in the ex-ante evaluation of the entire program. Out of 102 respondents to our survey, an extremely high percentage (72,5%) stated that they wanted to submit additional projects within IPA CBC HU – CRO 2007 – 2013, some implementers even up to 20 additional projects. Such a high percentage gives us a very good overview of the missed chances reported by the project planners, but also about the readiness of the human resources that implemented the project activities who have clearly recognized an actual need in the local communities of the cross-border area and wanted to respond adequately. This can be seen as a great loss, both in human resource development in all the institutions that would take part in these projects (possibly also employment which is highly under the EU average in the cross-border area) and natural resource management because most of these projects were dealing with a sustainable environment, tourism and development of economic cooperation. The planned number of projects that could have been implemented during the period 2007-2013 is certainly a good basis for the new Interreg V-A Program Hungary-Croatia 2014-2020 which will offer more possibilities in terms of more allocated funds. Also to be noted, project implementers from both sides of the border highly agree that the program influenced regional development. Mean value for Croatian side is 4,17 and for Hungarian side is 4,06 (Ravlić et al., 2019). We can observe that statement in regards to human resource management and their positive attitude toward created impact in their local communities. We will always come back to people and their readiness to collaborate, tackle common issues and work more for the benefit of the local area and the inhabitants. The survey was implemented in the sustainability period meaning that the project implementers objectively since the

project was implemented several years ago and also the 2008 crisis happened some years ago. Their answer, now in the sustainability period of the project when all the final reports of the implemented projects have been submitted, is based on their clear point of view and stand regarding the entire situation and how they have responded to needs, organised their human resources, activate their local and regional but also cross-border area. Moreover, it should not be disregarded that project implementers work in organisations that are involved in implementation of various strategies on the local and regional level, take part in the preparation of different action plans, are well informed about national strategies and other relevant documents for the area and scope of their work, work closely with target group members and other beneficiaries so they have insight in many different aspects of life and follow the situation on the local and regional level in their regions. Most of them were implementing the projects before and after the 2008 crisis which has to be considered when examining their answers within this survey. We have observed GDP values per inhabitant (PPS per inhabitant, % of EU average) in all of the regions NUTS 3 level that took part in the program, 2006 – 2015. (Eurostat, 2020b). We can clearly pinpoint the moment when all the regions simultaneously started to feel the effects of the crisis and until 2015 we see the very different pace at which all regions return to pre - 2008 levels of GDP. It was a long way and for some regions it still is but human resources within various project implementers obviously see that situation as a possibility to apply different projects in local and regional areas in CBC space to stimulate regional development further. Even the IPA CBC program is not the only program being implemented in the area we can still see the context of the awarded funds where the loss would be even greater if the funds would not be available.

When discussing obstacles it is necessary to mention another research (Eurobarometer, 2015), whose results broaden our view of the cooperation (N=602). The results clearly state that collaboration (doing business, traveling to visit family and friends, tourism purposes) is very low. Around 90% of people never travel abroad. Out of the total number of respondents between 70 and 86% would feel comfortable to have a manager, work colleague, neighbor or family member from Croatia or Hungary. What is very indicative is the question "Generally speaking, would you agree or disagree that most people can be trusted?" where 46% stated "yes", 53% stated "no" and 1% "I do not know". The answers imply that social capital is not on the adequate level which might be a very important prerequisite for successful cooperation, especially the cross-border one which was not very stimulated in the previous years. From all of the collected answers we clearly see a low level of collaboration and eagerness to cross the border for any of the categories: On the other hand, we see that there are not many actual obstacles for that, neither as a hesitance of the inhabitants (human resources), nor there is an actual "physical" barrier. This should be recognized as an opportunity and invest more funds in this direction, to encourage collaboration and networking among people, thus to invest even more in human resource development and "people to people" activities, in order to produce the desired cross-border impact.

Conclusion

The obtained results from primary research, but also other sources gave the possibility to get an overview of the different aspects that influence the absorption of awarded funds for the CBC area, but also showed the complexity of the territorial cooperation process. Even the observed area benefits from impressive natural resources and a fertile agricultural sector, the main resource is the human capital of its people (Arandarenko, Bartlett, 2012). As seen, cross-border collaboration does not derive from the mere opening of national borders that it supposedly helps at the same time to remove but stems from the strategic behaviour of actors who actively mobilize borders as resources (Sohn, 2014), bringing in their specific expertise and resources and shaping the cooperation (Zumbusch, Scherer, 2015), but with new types of assessment, new ways of determining a clear impact (Capello et al., 2018a¸ Capello et al., 2018b), since the cost of missed opportunities are clearly visible (Camagni et al., 2019). Even we did not see quantitative growth in terms of GDP, when taking into perspective the 2008 financial crisis that hit hard entire EU and especially the less developed rural areas across the EU, we still can see, within the primary research results, that human resources in the area are ready for collaboration, have ideas and prepared projects as measures to tackle common issues even there is still a long road ahead of them. Positive changes on all levels are possible and a great prerequisite is seen in terms of willingness to collaborate and absence of fear from people that come from "the other side of the border. With this paper, we aimed at bringing to scholars attention to all the possible levels that should be examined and included in the future more holistic approach that will give us thorough insight and base for further actions in the specific targeted area. Also, as seen, the availability of comparable data on cross-border, data is poor and there is space for improvement (Knippschild, Wiechmann, 2012). New data and indicators that are both comparable across the Member States, regions, and localities available at the lowest possible spatial level are needed. This may sometimes seem like an unattainable goal, but the failure to address it remains a fundamental weakness in EU policymaking for rural areas (Bryden, 2002). The measures should be more tailor-made in order to grasp the overall influence on the region, every city, town and community and its unique local conditions that can either help or hinder the economic development of that specific location. Also, effects that were achieved on the level of target group members (Ravlić et al., 2019) should be closely monitored, so that proper measures could target actual weak points on all the mentioned levels. The relevance of the identification of all the achieved results on all levels would allow any of over 60 CBC programmes in the EU to reach their full potential. Research is needed especially in those border areas where social and economic stagnation is visible (McCall, Williamson, 2000), which is the issue in many of the high number of cross-border areas in the EU.

Conflict of interests

The authors declare no conflict of interest.

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HOW THE TYPE OF OWNERSHIP AFFECTS CAPITAL BUDGETING PRACTICE IN THE SERBIAN AGRIBUSINESS INDUSTRY?

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ABSTRACT

The subject of the research is capital budgeting practices in Serbian agribusiness companies. The research aim is to determine whether there are differences in decision-making regarding capital budgeting depending on the ownership structure in those industries. The research was conducted in the first half of 2019, on a sample of 76 companies (from 122 targeted/i.e. 62.33% respondent rate) operating in the Republic of Serbia. Descriptive statistics and the Kruskal-Wallis test were used in the data analysis. IBM SPSS 20.0 statistical package was used for data processing. Research results confirmed that capital budgeting practices in the Serbian agribusiness companies can be considered as developed. Furthermore, there is a difference in the capital budgeting practices in the Republic of Serbia depending on the ownership of the analyzed sampled companies.

Introduction

Capital budgeting /CB/ is a basic decision in business finance (Brealy et al. 2007). A company decides to which (real) assets should be acquired, and it determines future business and benefits (Brealy et al. 2007). Furthermore, it is the most important when it comes to the creation of value /from investment/ (Van Horne, J., & Wachowicz, J, 2007). Accordingly, to Bodie et al. (2008), investment is the current commitment of money or other resources in the expectation of reaping future benefits. Finally, Palepu et al. (2007) emphasized that expected earnings and Return on Equity are crucial for investments.

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Having in mind the importance of the topic for the company's management, different authors carry out research based on the CB practice all over the world: 1. Australia: Truong et al., 2008; 2. USA: Gitman & Forrester, 1977; and Graham, Harvey, 2001; 3. Canada: Vijay & Ashwani, 1995; and Graham, Harvey, 2001; 3. European countries and regions: Brounen et al. 2004; Haas & Peeters, 2006; Dedi & Orsag, 2007; Sandahl & Sjögren, 2003; Hermes & Smid, 2007; Andor et al. 2011; Daunfeldt, S. & Hartwig, F, 2011; Orsag, S. & Mitar, J. 2014; Dragota et al. 2011; Wnuk-Pel, T, 2014; Barjaktarovic et al. 2015, Barjaktarović et al. 2016; Petković et al. 2019; and Stoimenova, E., 2019; 4. Asia: Kester et al. 1999; and Batra & Verma, 2017; 5. Africa: Correia, C, 2012; and Hall, J. & Millard, S, 2011. The main conclusion is that the level of development of the country has an influence on applied CB practices i.e. higher level of economic development – more sophisticated CB practice.

The digital transformation of enterprises on an intelligent way (Schliebs, 2018) requires more analytical skills from CFOs in all industries. Moreover, 63% of CEO (Chief Executive Officer) see Fourth Industrial Revolution (technologies – digital, physical, and biological) as a critical accelerator of the socio-economic impact of their companies. Moreover, it goes in line with the EU Strategic Plan 2020, to connect the digital single market (European Commission, 2016). It is following Think 2030, i.e. agribusiness sector in the EU and its potential to provide services to society is starkly contrasted by the impact that many current agricultural practices have on the environment, health, and climate, as well as on the long-term resilience and competitiveness of the sector itself (Allen et al. 2018). It is important to stress that agribusiness in Europe is under the increasing pressure of globalization, which is moving toward production standardization based on economic competitiveness (Chmieliński & Soliwoda, 2016). Moreover, less developed countries share of agriculture and agribusiness in the national incomes is much higher than in the highly developed countries (Mrówczyńska-Kamińska & Baer-Nawrocka, 2016). The Republic of Serbia, agribusiness has a great impact on GDP (gross domestic product) growth (Statistical Office of the Republic of Serbia, 2020). Furthermore, CEOs recognize a food innovation as a potential accelerator of global sustainability. Innovation will play a key role in the reengineering of the food system and they are ready for revolution "food-tech" that creates new opportunities for transformation across the food supply chain (UNGC, 2019). It can be concluded that companies should invest in order to obtain sustainable growths. It requires an adequate risk management approach which will take into consideration all theoretically possible scenarios for the business. Accordingly, the pandemic is one of them - COVID 19 influences companies' businesses. However, companies should continue with business processes and further development. Following it, 41% of CFOs plan to reduce their capital expenditures, twice as many as the 20% who plan to increase them (Deloitte, 2020).

The subject of the research is CB practices in the Serbian agribusiness companies (SAC). The aim of the research is to determine whether there are differences in decision-making (DM) regarding the CB depending on the ownership structure in those industries. Accordingly, the main hypothesis of the research (H0) is that there

is a difference in the CB DM process in the SAC based on ownership structure (OS). Furthermore, the additional hypothesis of the research (H1) is: CB practices in the Serbian agribusinesses companies can be considered as developed based on OS.

Recognizing the subject and purpose of research, this paper is conceived in four parts. The introduction defines the subject, aim and expected contributions to the research. The second part will be presented applied methodology. The third part of the paper will be discussed with research results. The research will be completed with concluding remarks.

Methodology

For the research, authors created questionnaire with 17 questions, divided into the two groups: I – personal data and II – CB. The questionnaire was sent via e-mail to financial departments of 122 companies (in targeted sectors) in the first half of 2019.

Furthermore, 76 companies returned fulfilled questionnaire, which represents 62.3% respondent rate and obtained results can be consider valid for future conclusions. The basic criterion for forming the sample were OS and sectors belonging. The OS of the sample is: 26 foreign-owned /FO/ (36.84%), 23 domestic privately-owned / DPO/ (30.26%) and 25 mixed/MO - state owned; joint owned. i.e. state and private owned; cooperatives; institutes; agencies/ (32.89%). The sample consists of 13 sectors related to agribusiness companies: production and distribution of agricultural products (28.95%); production of water, non-alcoholic and energy drinks /beverage industry/ (13.16%); two equal groups of respondents (10.53% each) are in production of: 1) confectionery products and 2) bread, dough, flour; dairy production and cheese processing (7.89%); sugar production (6.58%); animal feed production (5.26%); production of beer, wine, brandy (3.95%); three equal groups of respondents (2.63% each) are in:1) coffee production and distribution, 2) organic food production and 3) meet production; production of edible oils; two equal groups of respondents (1.32 % each) are in: 1) tobacco production and distribution, and 2) agro pellet production.

The structure of the sample with regard to the position of respondents is: CEO (37.66%); CFO (33.77%); financial analysts (7.79%); two equal groups of respondents (3.90% each) are financial managers and financial consultants; treasury and risk manager (5.19%); and three equal groups (2.60% each) are financial controllers, collection managers and associate for financial planning. The gender structure of the respondents' sample is 55.26% male, and 44.74% female. The educational structure of the respondents' sample is 6.58% Ph.D. 9.21% master of business administration, 81.58%, Bachler of business administration, and 2.63% bachelor of college. The average age of the respondents is 47, while the average years on the position is 11.

Out of 17 questions, 9 questions are related to CB applied 5-point scale i.e. from 1 to 5 (where it means: 1-never, 2-very-rare, 3-sometimes, 4-often, and 5-always). The first question is related to the clearly defined investment and development policy. The second issue deals with the business plan (BP) as one of the instruments of investment planning in the future. The third question considers whether the company makes a cash flow (CF)

projection before making an investment decision. The analysis of investment criteria /IC/ (net present value (NPV), internal rate of return (IRR), profitability index (PI), payback criterion /PB/, accounting rate of return (ARR), discounted payback criterion /DPB/, sensitivity analysis (SA) and other (O)) used in the company when selecting a project is discussed in the fourth question. As part of the fifth question, the method of calculating the cost of capital when making an investment decision was examined using: CAPM (Capital Asset Pricing Model), average historical returns on common shares /AHRCS/, average historical returns on previous investments /AHRPI/, discounted dividends model /DDM/, rates assigned by the state /RAS/ and other /O/. The sixth and seventh questions are discussed in an investment DM process whether the discount rate (DR) and/or CF are adjusted for the following risk factors: changes in market interest rates (MIR), foreign exchange (FX) risk, business risk (BR), inflation, and changes in raw material prices (RMP). The next question analysed whether a company makes a difference between the company's and the risk related to a particular investment when determining the DR. Finally, the last question explores the most common type of investment a company has had in the last 12 months. The offered investments are: an investment in production, new facilities and opening of new factories; introduction of a new product; design change of the existing product; market expansion; investing in staff, etc.

Descriptive statistics and the Kruskal-Wallis test were used in the data analysis. IBM SPSS 20.0 statistical package was used for data processing.

Research Results

It can be noticed in the sector related to agribusiness that relevant facts for CB decision process making are: 1) CEO has significant influence, 2) male participation is dominant, 3) high education is required, and 4) above 10-years' experience is needed. Furthermore, regarding the origin of equity in the analysed companies, it can be observed that the enlargement process is present, and investors from other sectors start activities through acquisition or as green-field investments. It can be explained by the fact that those sectors need huge investments with slowly returning on investment. Finally, obtained results can be compared with other researches findings conducted in the Republic of Serbia (Petković et. al, 2019; Barjaktarović et.al, 2016; Barjaktarović et.al, 2015) due to the similar structure of the part of the questionnaire connected to CB.

Clearly defined investment and development policy as a component of the concept of CB, in the considered companies is mostly rated with often (56.8%) and always (43.42%). If we look at the definition of investment and development policy concerning the OS of the company, the results are shown in Table 1. Those results are in line with research findings of Petković et al. (2019) and Barjaktarović et al. (2015). It can be noticed that all MO answered often, while majority FO and DPO said always. It is interesting to observe that in the case of findings of Petković et al. (2019) where FO companies attach the highest importance to the clearly defined investment and development policy, findings of this research can be explained with the fact that in analysed agribusiness companies are big local (DPO) companies (that perform businesses in the country and abroad) which can

be defined as group of connected companies /GCC/ (Barjaktarović et al. 2016a) which implemented adequate enterprise risk management (ERM) concepts and treasury.

Table 1. Appliance of clear investment and development policy in CB process in the company

OS	Often	Always
FO	9	19
DPO	9	14
MO	25	
Total	**43**	**33**

Source: Authors' calculations

The BP as one of the planning instruments where the investment plan for the future period is stated in detail, as well as the CF projection before making the investment decision, are always used in all analyzed companies, regardless of their OS. The result of the research concerning the BP in relation to the OS is given in the Table 2.

Table 2. Appliance of BP in investment planning

OS	Never	Sometimes	Always
FO			28
DPO		2	21
MO	1		24
Total	**1**	**2**	**73**

Source: Authors' calculations

CF projections before making an investment decision, without distinction, are often used in all analysed companies, regardless of their OS. It is important to emphasize that the BP and CF projections before making the investment decision are always used in analysed companies, regardless of their OS, and it is in line with the research findings of Petković et al. (2019). Specifically, 48 of the 76 companies always deal with CF projections before making an investment decision, 27 of the 76 analysed often deal with the question asked and only one company deals with the question asked very rarely. Table 3 contains the results of research on attitudes towards CF depending on the type of OS. It can be noticed that all FO answered always and all MO said often. The majority of DPO answered always, while the minority said often or very-rare, which can be explained with the size of the company and implemented ERM procedures and treasury (Jelenković & Barjaktarović, 2016; Barjaktarović & Vićentijević, 2017).

Table 3. Appliance of CF projections before making an investment decision

OS	Very-rare	Often	Always
FO			28
DPO	1	2	20
MO		25	
Total	**1**	**27**	**48**

Source: Authors' calculations

When selecting a project, the analysed companies the most often apply the following IC: NPV, IRR, PI, PB, ARR, DPB, SA, and O (Table 4). On the basis of given answers, it couldn't make the appropriate conclusion about the most often used IC in the sample. It can be explained with the characteristics of businesses of analysed companies and skills of sampled companies' staff involved in the investment decision process. These responses showed some deviation from previous studies, where PB was the predominantly used IC (Petković et al. 2019; Barjaktarović et al. 2016; Barjaktarović et al. 2015).

Table 4. Appliance of IC in project selection

The IC	Never	Very rare	Sometimes	Often	Always	To no of answers
NPV	1	1	14	27	27	**70**
IRR	2		41	3	17	**63**
PI		1	47	4	13	**65**
PB	1	1	29	9	30	**70**
ARR	2	1	15	25	9	**52**
DPB	1		50	1	8	**60**
SA		35	15	1	15	**66**
O		24	3		1	**28**

Source: Authors' calculations

To determine whether companies with different OS use the same or different IC when selecting a project, the Kruskal-Wallis test was used. This test showed a statistically significant difference in the use of the above IC for companies of different OS (FO: n = 28, Md = 49.75; DPO: n = 23, Md = 45.96; MO: n = 25, Md = 19.04) $\chi 2$ (2.76) = 31.229, p-value = 0.000. The test results show that MO pays significantly less attention to IC compared to companies with FO and DPO. It can be explained by the fact that ERM is better developed and implemented in FO and DPO (Barjaktarović & Vićentijević, 2017). Furthermore, those companies have separately organized treasury departments within the finance division and they took part in this research. It is in line with the research findings of Jelenković & Barjaktarović (2016).

When making an investment decision, the cost of capital is calculated by applying: CAPM model, AHRCS, AHRPI, DDM, RAS, and O. The survey results for all companies are presented in the given Table 5 and they can be explained with the same argumentation which is given for previous two questions. Those are the reasons why the research findings are not in line with the results of Petković et al. (2019), Barjaktarović et al. (2016), and Barjaktarović et al. (2015).

Table 5. Appliance of the method in calculating the cost of capital in making investment decision

The method	Never	Very-rare	Sometimes	Often	Always	To no of answers
CAPM	2	25	6	9	11	**53**
AHRCS	27	9	14	1		**51**
AHRPI		1	46	14	1	**62**
DDM	34	15		1		**50**
RAS	26	14	9	8		**57**
O	1	2	3	6	1	**2**

Source: Authors' calculations

Similar to the previous question, the Kruskal-Wallis test indicates the existence of a significant difference in the calculating of cost of capital when making an investment decision in relation to the OS of the company. The test results show: Md = 47.6 for 24 FO, for 20 DPO, Md = 45.18 and for 24 MO Md = 12.5, as well as $\chi 2$ (2, 68) = 49,008, p-value = 0.000. The issue is mostly addressed by FO, to a lesser extent by DPO, while companies with MO do not pay significant attention to this issue.

When making an investment decision, the DR is adjusted for the following risk factors in order: FX risk, inflation, and change of RMP, BR, and change of MIR (Table 6). It is logical, having in mind the characteristics of the DR for agribusiness. It is the reason why the research findings are different from the findings of Petković et al. (2019). FX risk is the most important factor for adjusting the DR, due to the fact that companies import raw-materials and export final products /according to Jeremić et al. (2016) food-processing industry is large exporters that provide huge net value for country's economy/ in convertible currencies. Moreover, they use different trade finance products and derivate arranged with FX clause or FX. Secondly, inflation is a relevant factor for all business arrangements in dinars. Thirdly, the change of RMP is especially important in terms of commodities subject of trade on the international market and state's decision on excise or subsidized goods. Fourthly, BR has an influence on terms and conditions which will be agreed with creditors, suppliers and customers. Finally, the change of MIR will have influence on all business activities and arrangements of the company.

Table 6. Appliance of risk factors in adjusting a discount rate in the investment decision process

Risk factors	Never	Very-rare	Sometimes	Often	Always	To no of answers
FX risk			10	32	28	70
Inflation			12	38	19	69
Change of RMP		2	33	9	24	68
BR		1	35	9	22	67
Change of MIR	1		35	7	23	66

Source: Authors' calculations

It is evident that this question is mostly dealt with by all companies, because very few answers are never and very-rarely. The analysis of this issue considered for companies divided into three groups concerning the OS indicates the existence of a statistically significant difference ($\chi 2$ (2, 75) = 22,958, p-value = 0,000). More precisely, the results of the Kruskal-Wallis test show that DPO give convincingly the greatest importance to this issue (n = 23, Md = 53.35), followed by FO give much less importance (n = 28, Md = 37.82), and finally the company with MO (n = 24, Md = 23.5).

When making an investment decision, CF are adjusted for the following risk factors in order: FX risk, change of RMP, inflation, change of MIR, and BR. It can be explained with the essence of CF in agribusiness. It is the reason why the research findings are different from the findings of Petković et al. (2019). FX risk is the most important factor for adjusting the CF, having in mind that official reports are preparing in dinars, and in-coming and out-coming payments can be in different convertible currencies. Secondly, the change of RMP is especially important in terms of local and global influence on daily cash circulation. Thirdly, inflation is a relevant factor for all business arrangements in dinars and generated cash. Fourthly, change of MIR will have an influence on all business activities and arrangements of the company expressed in incoming and outgoing payments. Finally, BR has influence on terms and conditions which will be agreed with stakeholders and accordingly cash flow circulation. The results of the research on this question (Table 7), show that the answers to various risks are mostly: sometimes, often, and always.

Table 7. Appliance of risk factors in adjusting a cash flow in the investment decision process

Risk factors	Never	Very-rare	Sometimes	Often	Always	To no of answers
FX risk			10	32	28	**70**
Change of RMP	1	1	9	32	27	**70**
Inflation		1	10	34	23	**68**
Change of MIR		1	10	34	23	**68**
BR		2	42	1	22	**67**

Source: Authors' calculations

If the mentioned question is analyzed from the angle of companies of different OS, the results of the Kruskal-Wallis test are similar to the previous question. Namely, the test indicates the existence of a statistically significant difference ($\chi 2$ (2, 75) = 22,701, p-value = 0,000) between FO, DPO, and Mo in relation to this issue. As the test results showed that: Md = 52.85 for 23 DPO, Md = 38.23 for 28 FO, and Md = 23.50 for 24 MO, it is clear that DPO pays the most attention to this issue.

The results of the analysis of whether the company distinguishes between the company's risk and the risks related to a particular investment when determining the DR are presented in Table 8. It can be noticed that answers are mostly: very-rare, often and always. It is in line with the findings of Petković et al. (2019). The majority of

respondents said often, where all MO stressed it. The second large group of respondents answered always, and the majority DPO confirmed it. The third important group said very-rare, where the majority came from FO. It is an interesting result, having in mind that FO companies usually have better ERM practices, and understands risks connected to their business and enterprises itself (Petković et al. 2019). Those results can be explained with the companies' staff sample and their skills. It can be concluded that there is a difference in making distinguishes between the company's risk and the risks related to particular investment when determining the DR regarding ownership structure: 1) DPO always, 2) MO often, and 3) FO very-rare.

Table 8. Distinguish between the company's risk and the risks related to a particular investment in the moment of determining the discount rate

OS	Never	Very-rare	Often	Always
FO	1	11	9	7
DPO		1	6	15
MO			24	
Total	1	12	39	22

Source: Authors' calculations

By analyzing the type of investment that the company had in the last 12 months, where the following investments were considered in order: introduction of a new product; design change of the existing product; market expansion; investing in staff; introduction of a new product; investment in production, new facilities and opening of new factories (Table 9). On the basis of given answers, it couldn't make the appropriate conclusion about the most important types of investments in the previous 12 months in the analysed sample of companies. Those findings are different comparing to Petković et al. (2019). It can be explained with the research results of UNGC (2019), where food innovation i.e. "food-tech" is a potential accelerator for transformation across the food supply chain.

Table 9. Type of investment in the previous 12 months

Type of investment	Never	Very-rare	Sometimes	Often	Always	Total
Investment in production, new facilities and opening of new factories		1	35	17	14	**67**
Introduction of a new product				16	24	**40**
Design change of the existing product			12	36	16	**64**
Market expansion	7		1	12	22	**42**
Investing in staff		2	26	9	30	**67**
Other			1	4		**5**

Source: Author's calculations

Dealing with the same issue, but in relation to the OS of companies, the Kruskal-Wallis test recorded a significant statistical difference ($\chi 2$ (2, 75) = 43,469, p-value = 0,000). The analysis included 76 companies, of which 28 were FO (Md = 49.41), 23 DPO (Md = 48.63) and 25 MO (Md = 14.50). These results indicate that the difference is due to MO where this issue is quite neglected. Finally, when all questions on CB are summarized, the results of the Kruskal-Wallis test indicate the existence of a statistically significant difference between companies of different OS ($\chi 2$ (2, 76) = 43,804, p-value = 0,000). There is an obvious difference between FO and DPO in relation to companies of MO. This analysis included: 28 FO where Md = 48.29; 23 DPO with Md = 52.04 and 25 MO with Md = 15.08.

Conclusion

The key findings of the executed research are: 1) clearly defined investment and development policy as a component of the concept of CB, in the considered companies is mostly rated with often and always. The majority of FO and DPO answered always. 2) The BP as one of the planning instruments where the investment plan for the future period is stated in detail, as well as the cash flow projection before making the investment decision, are always used in all analysed companies, regardless of their ownership structure. 3) When selecting a project, MO pays significantly less attention to IC compared to companies with FO and DPO. 4) When making an investment decision, the cost of capital is calculated by applying: CAPM model, AHRCS, AHRPI, DDM, RAS, and O. The issue is mostly addressed by FO, to a lesser extent by DPO, while companies with MO do not pay significant attention to this issue. 5) When making an investment decision, the DR is adjusted for the following risk factors in order: FX risk, inflation, and change of RMP, BR, and change of MIR. DPO gives convincingly the greatest importance to this issue followed by FO gives much less importance, and finally the company with MO. 6) When making an investment decision, CF are adjusted for the following risk factors in order: FX risk, change of RMP, inflation, change of MIR, and BR. DPO gives convincingly the greatest importance to this issue followed by FO gives much less importance, and finally the company with MO. 7) The results of the analysis of whether the company distinguishes between the company's risk and the risks related to a particular investment when determining the DR are DPO always, MO often, and FO very-rare. 8) By analysing the type of investment that the company had in the last 12 months, the results indicates that MO related this issue is quite neglected, comparing to FO and DPO.

Finally, when all questions on CB are summarized, the results of the Kruskal-Wallis test indicate the existence of a statistically significant difference between companies of different OS. There is an obvious difference between FO and DPO in relation to companies of MO. Those findings can be explained with the chosen sample of companies and their characteristics in terms of the business they perform, way of implementing ERM and treasury, and companies' staff involved in fulfilling the questionnaires.

The research results confirmed the main hypotheses that there is a difference in the CB DM process in the SAC based on OS. Furthermore, it is confirmed that CB practices in the SAC can be considered as developed based on OS. Future research will go in the direction of establishing a link between companies that are groups of related parties in the country and abroad, in order to see if the same practice exists.

Conflict of interests

The authors declare no conflict of interest.

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QUALITY OF LIFE OF THE ELDERLY POPULATION DURING THE VIRUS COVID-19 PANDEMIC WITH SPECIAL REFERENCE TO AGRICULTURISTS

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ABSTRACT

In the Republic of Serbia, on March 15th, 2020 Government decided to declare a state of emergency due to the Covid-19 pandemic. One of the measures was a movement ban for people over 65 in urban areas and those over 70 in rural areas. This research should indicate how people over 65 in urban areas have endured this situation, especially in relation to the same population in rural areas, as well as implications of the movement ban on the quality of life of the elderly population. Special importance is given to the rural population engaged in agriculture. A tool of data collection in this research was anonymous survey. Respondents' answers were statistically processed, which led to clear conclusions about the large negative consequences for the elderly population, including the agricultural activities in rural areas. Covid-19 is still present, which opens further questions related to the quality of life of the elderly population, if necessity for similar measures recurs in the future.

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Introduction

Due to the difficult epidemiological situation in the world caused by the Covid-19 virus, and in order to protect the health of entire population, Serbian Government prohibited on March 15th movement to the citizens over 65 year in urban areas and those over 70 in rural areas. For the rest of the population the ban was in effect firstly from 8pm to 5am every day, but later measures were tightened, and the bans included hours from 5pm to 5am the next day, as well as all-day weekend bans. Those who were on work assignments had special movement permits.

The population over 65 was enabled to go out once a week in the period from 4 o'clock to 7 o'clock in the morning, with obligatory preventive measures such as wearing masks and gloves, as well as keeping physical distance, to purchase necessities for the next seven days. From April 21st, 2020, after being isolated for more than a month, the elderly population has been allowed to go out for half an hour three times a week.

The state of emergency in the Republic of Serbia was lifted on May 7th, 2020, at 5am, after 53 days. In the new situation, people older than 65 are recommended to assess the risk of leaving the house based on the data on the epidemiological situation, which were regularly announced by experts through the media.

Socialization is an important part of human life, as well as phycological aspect of every individual or to use words of N. Rot (2014): "[…] culture and society to which an individual belongs are the basic source of socialization. Socialization is achieved through the actions of other persons and institutions that are factors through which society seeks to adopt certain forms of behaviour." On the other hand, the isolation of every kind makes people feel stressed and uncomfortable, even more so when it comes to global health threat. It is a difficult situation for the majority. However, in the general population there are sensitive groups, which are affected by the pandemic and the isolation more and harder, even more so if they are not treated equally. The inequalities are significant problem of modern life, but "the happenings during the pandemic have shed light on the inequalities in the society. In general understanding, discriminative attitudes towards some group of people on the grounds of economic properties, race or ethnicity, age, and gender occupies the first steps on the ladder of social inequalities." (Kiran, 2020) The United Nations (2020) presented the same list of vulnerable groups, that face extreme difficulties during the pandemic. These are poor, women, migrants, elderly, etc. The last category is the main point of this paper, bur firstly it is very important to define who belongs to this category. "According to the psycho-pedagogical area, entering the category of elderly people means having an age ranging from 65 years upwards. Psycho-pedagogical scholars have divided this macro category of the elderly into 4 micro categories: young elderly people from 65 to 74 years old, elderly people from 75 to 84 years old, elderly adults from 85 to 99 years old and centenarians from 100 years upwards." (Cirilli et al., 2020) However, the majority of older population belongs to the generation of so-called "baby boomers, born between 1946 and 1964 and until recently dominated the labour market" (Murphy,

2007) and now feeling powerless and lonely and not only, "the ageist attitudes towards them is worsening this already harsh situation for them" (Kendall-Taylor et al., 2020). Considering that fact it is reasonable to assume that the elderly population is a particularly sensitive part of the nation and that the effects of the unusual situation in society (pandemic and isolation) are multiple. It is however important to explain why the over 65 are that vulnerable. According to the Simić et al. (2007) "in old age there can be a change in thinking (cognition), memory, in the personality and its mood and behaviour. Set a boundary between diseases and normal processes are often not easy, e.g. reducing or slowing down the mental process can be seen as a consequence age, and what in essence can be a consequence of diseases that are successfully treated (e.g. depression, hypothyroidism)." That is why the isolation, added to the common threat of the virus can worsen the life quality of old people. "Feeling of being lonely diminishes the strength of the immune system which is already not that strong in old people" (Solomon, 2020), but also "this may give the feeling of being a threat to the wellbeing of the family and society to the elderly (Koon, 2020).

This is not an issue regarding a small percentage of the population. "We live in a time of aging population. Due to advances in medicine and health care, life expectancy is being extended" (Tokić et al., 2017), but also there is a significant problem with a low rate of natural increase, which makes Serbia a country of elderly.

However, Serbia is also a rural country. "Rural areas of the Republic of Serbia are characterized by unfavourable demographic trends, insufficient diversification of activities, inadequate equipment with infrastructure and other important elements necessary for development. Regional differences are large, so it occurs through economic, financial, socio-cultural, environmental and other related problems. Rural areas cover over 96% of settlements (over 78% of the area of the Republic of Serbia)." (Ritić et al., 2020) It is obvious that pandemic made the unfavourable situation more difficult. It is necessary therefore to understand what differences are, if there are any, in the life quality of elderly in cities and countryside.

"It can be observed that older people are increasingly viewed with a certain stigmatization of consumers of social resources because the condition of the elderly is associated with weaknesses, fragility and disease; which leads to the notion of unproductivity, so old age is understood as a source of economic burden for the community." (Vuletić at al., 2018) However, when it comes to the rural population, the fact that it is the elderly population does not necessarily mean that it is not the working population. A large number of rural residents are actively engaged in agriculture, either for their own needs or as a form of business activity.

The Covid-19 pandemic raised a question regarding country life and urban living. As Božilović and Petković rightly observe (2020) "in recent months, a discourse has emerged in the public that links the pandemic to cities, labelling those cities as the places responsible for its outbreak and rapid spread", while "the village is seen as a safer (healthier) place to live, which in an emergency provides more opportunities

to stay outdoors, and thus more meaningful leisure time compared to the city." It is reasonable to assume that the situation is not that simple and that there are difficulties in dealing with the uncertainty of the pandemic in both cities and villages.

Therefore, the research aimed to show the social, economic and psychological implications of multi-day quarantine on the population older than 65 years in the cities and 70 years in rural areas, as well as whether there is a difference in lifestyle of the elderly population between towns and villages after isolation. In addition, the aim was to show how the movement ban affected agricultural activities in rural areas.

Materials and methods

The research conducted in five urban and five rural areas on a sample of a total of 1000 respondents concerns the quality of life of the population older than 65 and 70 during the state of emergency. Aspects that were considered were health and psychological condition, financial situation and social life.

The research was conducted with the aim to determine the extent of the already mentioned isolation during the state of emergency on the elderly population, but also to determine the potential differences in the consequences of this way of life between the rural and urban population.

The main hypothesis assumes that the consequences of isolation during the state of emergency left significant negative consequences on the population older than 65 and 70 years. The auxiliary hypothesis, on the other hand, assumes that the population over the age of 65 experienced emergency measures in the city in a different way in relation to the village population, i.e. that the negative consequences were less felt in rural areas. The second auxiliary hypothesis concerns the agricultural activities of the rural population, and the assumption is that the movement ban had a negative impact on this aspect of life as well.

The method of data collection implies the so-called "first-hand data collection" (Singleton, Straits, 2018). In this case it was an anonymous survey. The aim was to collect data of the quantitative type, which is considered an adequate tool in the case of this primarily sociological research, where "sociological survey is one of the main methods of quantitative research" (Bryman, 2006). This particular research is an example of "socio-psychological (values, lifestyles, habits) survey research" (Fajgelj, 2020). Considering the topic, this way of data collection was important because "any data collection through conversation turns into a certain social relationship, which in the methodology is considered from the point of view of creating scientifically usable information, as the main goal" (Milić, 1996).

The main purpose of the research is to gather information on how citizens older than 65 and 70, respectively, who were forbidden to move during the state of emergency, endured quarantine, having in mind the social and economic circumstances, as well as the psychological and health condition of the respondents.

The survey was conducted in the period from May 16th, 2020 to June 6th, 2020. The survey included 1000 respondents, citizens of the Republic of Serbia of different genders and education. The survey was conducted in five cities and five villages in different parts of the Republic of Serbia, and in each of them there were 500 respondents.

During the survey, which was conducted by telephone, researchers used a questionnaire containing ten questions with 4 or 3 answers offered. They were asked to all respondents, while the respondents from rural areas were asked additional five questions related to agricultural activities.

Questions used in the survey are as following:

1. Did you respect quarantine measures during the state of emergency?
2. What is your health condition after quarantine compared to the previous period?
3. How did you spend your time during quarantine?
4. What is your financial situation after quarantine?
5. What bothered you the most during quarantine?
6. What did you miss the most during quarantine?
7. How did you procure necessities during quarantine?
8. How would you rate your life during quarantine?
9. Has your life returned to the previous state after the quarantine was lifted?
10. What is the quality of your life after quarantine?

Additional questions for respondents from rural areas:

1. Are you engaged in agriculture?
2. Did you perform agricultural activities during the movement ban?
3. Are you late with agricultural work?
4. Has the movement ban affected your agricultural activities?
5. Will you be able to make up for what you missed / were late in the field works?

Results

After the survey, questionnaires were collected and processed, and the presentation of the results was made in a tabular method. Total number of respondents is 1000, 500 in rural areas and 500 in urban areas.

Table 1. Did you respect quarantine measures during the state of emergency?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Yes	374	420
Partly	114	80
No	12	0

Source: Authors, 2020

Table 2. What is your health condition after quarantine compared to the previous period?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Better	0	0
Worse	325	41
Same	175	459

Source: Authors, 2020

Table 3. How did you spend your time during quarantine?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Watching TV, reading books...	262	97
Courtyard / balcony	43	400
Telephone, computer, social media...	195	3

Source: Authors, 2020

Table 4. What is your financial situation after quarantine?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Better	500	500
Worse	0	0
Same	0	0

Source: Authors, 2020

Table 5. What bothered you the most during quarantine?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Loneliness	140	0
Impossibility to take a walk	222	0
Problem in grocery procurement	105	396
Fear	12	104

Source: Authors, 2020

Table 6. What did you miss the most during quarantine?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Children, grandchildren…	353	500
Going out	141	0
Pre quarantine routine	0	0
Sense of freedom	6	0

Source: Authors, 2020

Table 7. How did you procure necessities during quarantine?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Once a week when it was allowed	165	61
It was being done by family members	253	388
It was being done by neighbours	76	51
Paying delivery or someone to do it	6	0

Source: Authors, 2020

Table 8. How would you rate your life during quarantine?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Good	76	301
Medium	190	199
Bad	234	0

Source: Authors, 2020

Table 9. Has your life returned to the previous state after the quarantine was lifted?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Yes	160	471
Partly	125	29
No	215	0

Source: Authors, 2020

Table 10. What is the quality of your life after quarantine?

	Urban areas	Rural areas
Answers	**Number of answers**	**Number of answers**
Better	0	0
Worse	362	118
Same	138	382

Source: Authors, 2020

Table 11. Are you engaged in agriculture?

Answers	**Number of answers**
Yes, I have agricultural holding	237
Only for our own needs	263
No	0

Source: Authors, 2020

Table 12. Did you perform agricultural activities during the movement ban?

Answers	Number of answers
Yes, with a movement permit	259
Yes, without movement permit	171
No	70

Source: Authors, 2020

Table 13. Are you late with agricultural work?

Answers	Number of answers
Yes	423
No	77

Source: Authors, 2020

Table 14. Has the movement ban affected your agricultural activities?

Answers	Number of answers
Yes (we haven't done all the work)	394
No (we have done everything as planned)	106

Source: Authors, 2020

Table 15. Will you be able to make up for what you missed / were late in the field works?

Answers	Number of answers
Yes	290
Ne	210

Source: Authors, 2020

Discussions

Looking at the results of the survey, it can be seen, above all, that senior citizens largely respected the Government measures during the state of emergency, although more of them did so in rural areas. It is also obvious that the consequences of isolation are ubiquitous, especially when it comes to the health of elderly citizens, because 36.6% of the respondents assessed their health as worse compared to the previous period, and while 63.4% answered that their health is the same. However, it must be noted that the health of the population in rural areas is far better, as only 41 respondents felt worse. There are big differences in the way the residents of cities and villages spent their time. While most of the respondents from rural areas spent time outside the house (yard, balcony), in the city it was with television, books or computers.

An element about which there is no doubt is the financial situation, where even an incredible 100% of respondents claimed that their financial situation was better. It can be assumed that this was influenced by two types of assistance from the Government of the Republic of Serbia (100 Euros to all adult citizens and a one-time assistance of 4,000 RSD to pensioners).

It is known, and so the literature testifies, that the third age is especially sensitive to loneliness: "especially old age, is the last critical phase when loneliness is put to a decisive test. Man in all his life so far – either fully conceived, or only partially fulfilled, or in an objective balance assessed as missed and empty – now enters into possible loneliness and preparation for death, calm and cheerful, or perceives his loneliness as the worst curse in the world." (Jerotić, 2011) Therefore, it is important to pay attention to how quarantine affected the psychological state of the elderly population, because as many as 85.3% of respondents said that they mostly lacked contact with loved ones, and only then walking in urban areas, while in the village the only discomfort was impossibility to maintain close contact with family, even despite the fact that they stated that mostly children were those who brought them basic necessities of life. It is also noticeable that a large number of elderly people went shopping in the city alone in relation to the village where elderly related on others. It can be seen that the city itself "largely shapes the statuses, resources, identities and actions of individuals and social groups as urban actors" (Vujović, Petrović, 2005).

We can finally conclude that the quality of life of the rural population after isolation is significantly higher compared to the urban population, as well as that they returned to everyday life faster. "Village and city are two different historically formed socio-spatial forms of human existence that are culturally complementary" (Mitrović, 1995). It is clear, therefore, that two different ways of life influenced how the elderly will cope with the state of emergency, what consequences it will leave on them.

However, although the rural population in some way relieved itself of the quarantine situation, the question of agricultural activities arose. Agriculture is the only income for a good part of this population. As expected, all respondents stated that they are engaged in agriculture, some of them have farms, while there are slightly more of them who work in field for their own needs. Slightly more than half of the respondents obtained movement permits for field works, issued by the Ministry of Agriculture, while a not insignificant number performed activities without permits, as many as 171. A small part gave up work during the movement ban and it is worth to emphasize that these are all persons who have agricultural production for their own needs. The vast majority was late with agricultural work and failed to do all the planned activities. Asked whether they will be able to recover from the consequences of the quarantine, slightly more than half said they will, while the rest are permanently behind this year. It must be pointed out that those who produce for their own needs will recover first, while larger farms are in a bigger problem.

One should pay attention here to one interesting phenomenon. Asked whether they complied with the measures, the villagers all answered that they did, with 80 stating that they complied with the measures in part. On the other hand, 171 of them stated that they violated the movement ban and performed work in the field without a permit. One logical conclusion is imposed: working in the field for a Serbian peasant is a must, inviolability, an obligation, and they do not understand their agricultural activities as

something that can violate any rule. The land will not wait, and the peasant will not let it wait. It is true that the movement permits of peasants for the sake of work in the field were regulated at some point and the ban did not apply to them. However, there was the first period when the farmers and his needs were not considered and when the ban was valid for them as well. On the other hand, the question is whether they were informed in the right way how to obtain permits, whether they master the technology, have access to the Internet and the like, since the applications for permits were submitted electronically.

This research used a survey when collecting data and it allowed that "in addition to objective data, survey research to collect data on mental or psychophysical characteristics, moods, emotions, etc." (Fajgelj, 2020). There is a great opportunity for further research when one could go deeper into each of the previous points and examine in more detail the motivation of the given answers. In addition, it would be advisable to return to these issues after a certain time, in order to analyse the consequences from a greater time distance.

Conclusions

The year 2020 brought great worries on a global level and consequently great changes. The pandemic of Covid-19 virus disrupted the world order in every segment. The Republic of Serbia was no exception and at the beginning of March this year, the first case of this contagious disease was registered. In order to bring the spread of the virus under control, the Government of the Republic of Serbia introduced a series of measures, with the goal and hope to prevent further illness of the population. One of the first measures was the movement ban to the population older than 65 in urban areas or older than 70 years in rural areas.

Having in mind the fact that the elderly population is the most vulnerable in terms of health, and that these measures were adopted for that very reason, the question arose how such part of society endured the period of isolation, and what are the consequences for older citizens.

The conducted research primarily concerns the quality of life of seniors in our society, starting from the health aspect, through the psychological state to financial stability. However, as the measures were taken distinguishing the urban from the rural population, and due to completely different ways of life, it was reasonable to assume that the emergency measures would have different effects on the inhabitants of urban areas and the inhabitants of rural settlements. In addition to the already mentioned elements, the rural population had face with the difficulties of performing agricultural work, which is an important part of their lives, and often the only income.

The research, which included ten questions (and additional five questions for rural population) with offered answers, concerned the quality of life in the already mentioned aspects. The survey was conducted by telephone and the respondents did not provide any personal data, except for age and gender. Their answers, however, are extremely personal, as most of the questions reflect their emotional states and personal attitudes.

The results, given in tables on the previous pages, confirmed that all the assumptions, i.e. hypotheses, proved to be correct. The movement ban significantly affected the quality of life of the elderly population in a negative context. Health and mental condition were assessed as worse in most cases, which testifies to the far-reaching isolation, loneliness, lack of movement, reduced social interaction, familiarity with a type of routine that did not depend on them. The only thing that is unequivocally assessed as an improvement is the financial situation, which may be a consequence of the measures of financial assistance of the Government of the Republic of Serbia. The second hypothesis, related to different ways of enduring the state of emergency among the citizens of the city and the village, has been confirmed. The rural population evaluated the quality of life as better in relation to the urban population, and the return to normal life was faster and more harmless. The same is the case with the third hypothesis, which concerned the negative impact of the movement ban on agricultural activities.

It is extremely important to consider the results of the research in order to try to improve the lives of over 65 population. The elderly people are vulnerable as it is and, as it has been shown, it is necessary to work harder to improve their position. Even in the pre Covid-19 world this part of the population needed intergenerational solidarity that comprehends "support and cooperation between different age groups and is demonstrated through enabling equal social inclusion and participation of people over the age of 65, in order to have a dignified aging and a sense of self-esteem" (Todorović, Vračević, 2015). "Finally, a sense of security and adequate financial circumstances are most important basis for good adaptation to old age. In favourable mental conditions and social climate, where it is not under the impact of poverty, discrimination and segregation, the population of the elderly may be well integrated, satisfied with her social place and role and on its own way constructive." (Poleksić, 1979) As it was said, but it is worth repeating, all this elements are irreplaceable for the oldest part of the population to feel secure and live with dignity. But now more that ever it is crucial to consider what they feel and what they need. That is why this research tries to highlight the importance of the given topic and initiate fellows researcher to do the same, as well as the authorities to consider all aspect of the life of our oldest when adopting anti Covid-19 measures.

The significance of this topic is just beginning to be seen, since the events that were the subject of this research have taken place recently and, as it seems, they are still happening. It is necessary, it can be assumed, for a certain period to pass in order to determine the extent of the consequences of quarantine for the elderly population. Also, with the time distance, and therefore emotional, the respondents could give different answers, and comparative analysis could lead to new findings. However, at the time of writing this paper, the situation with the epidemic has once again started to worsen, after a brief calm period. Virus is not extinguished, and the experts are arguing about the potential return of certain measures. For this reason, it is extremely important to point out the problems of the elderly population and keep in mind what the consequences may be in the event of the need for similar measures in the future.

Conflict of interests

The authors declare no conflict of interest.

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WHAT DRIVES PEASANT HOUSEHOLD TO COMMERCIALIZE? AN INVESTIGATION OF THE FACTORS LEADING TO COMMERCIALIZATION OF SEMI-SUBSISTENCE FARMING IN UKRAINE

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ABSTRACT

More than half of the total number of households in Ukraine are engaged in agricultural activities both for food self-sufficiency and for the production of marketable agricultural products, acting as subsistence or semi-subsistence farms. The determination of the right strategy for the further development of this form of farming is the key to the effective development of the agricultural sector, rural areas and the national economy as a whole. Instigated by Europe's CAP policy and its implementation, the study seeks to and delivers the factors influencing the commercialization of the semi-subsistence farms in Ukraine, based on the wealth of statistical data. The findings also show the lack of a strategy to support the establishment of a model of individual farming, which must counteract the risks of industrialized agro-production.

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Introduction

As of early 2019, there were 8,175.8 thousand households in Ukraine that are in one way or another related to agricultural production (identified legally as households plots (hereinafter referred to as HP or households)). To illustrate the scale (prevalence) of this phenomenon, it should be noted that it is more than half (55%) of the total number of households in the country. Aggregate households that include, according to the methodology of the State Statistics Service of Ukraine, households engaged in agricultural activities both for food self-sufficiency and for the production of marketable agricultural products (households in rural areas, households in urban areas, as well as physical persons - entrepreneurs who conduct their activities in the field of agriculture without creating a legal entity) in 2018 produced 41.24% of agricultural production in Ukraine (for comparison - farmers - just over 7%) (SSSU 2015). Furthermore, households are indeed the main producer of such food as potatoes, vegetable and melon crops (92%), fruit, berry and grapes (79.74%), livestock products, including milk (73.14%), wool (87.5%) and other livestock products, including honey (98% according to 2017). Households account for more than a third of total meat production (36.14%) and a significant proportion of egg production (44.83%) (AGRICULTURE OF UKRAINE, 2018; SSSU; SSSU 2018). This determines their crucial role in providing the population with food and guaranteeing country's food security.

However, for the most part, households are production units with low land-use efficiency. According to 2018 data, the average yield in households is, for the most part, lower than in the enterprises, with the exception being the production of grapes and fruits and berries. Households are characterized by a low level of technological development of production (for example, on average, only 9.8% of producers use breeding stock, artificial insemination - 13.8%). Another problem is the lack of assurance of product safety (for example, only 17.9% of producers use milk sanitary quality control and a little more than half - 57.7% resort to the sanitary treatment of livestock premises) (AGRICULTURE OF UKRAINE, 2018; SSSU; SSSU 2018). Moreover, without the status of entrepreneurial units, such organizational forms of business do not contribute much to the development of the local economy (due to the lack of income tax obligations and voluntary social insurance (LAW OF UKRAINE 2003). Therefore, low efficiency and technological level, a small contribution to the development of the local economy are the hallmarks of such a large category of producers as "households" in Ukraine.

On the other hand, the role of these farms is significant in terms of the social development of rural areas (Popescu, 2014). Keeping traditional methods of production and culture, households also act as employers, as an average of 2.3% of them attract permanent employees, for seasonal work - 52.3%, and for one-time work - 45.4%. However, it should be emphasized that this employment is informal and generally run counter to the requirements of the law. Here we should emphasize the need to clearly distinguish between households plots (HP) and Personal peasant household (hereinafter referred to as PPH), although, and it is very important, the latter are included into the former. Persons whose main activities are carried out within the framework of Personal

peasant household under the Law of the same name (LAW OF UKRAINE 2003) (which is 48.9% of the total number of "households") are recognized as self-sufficient and are self-employed persons. Thus, PPHs emerge as the "primary" form (a form of first preference) of organization of business activity in the countryside (although the Law does not recognize this), and the massive stratum of people involved in the production processes of PPHs forms the potential for rural business development. We also emphasize that the socio-economic role of households, in particular in rural areas, is that they help urban relatives in terms of income and food.

At the same time, following the typology proposed in (Davidova, 2014), the class of small food producers in Ukraine - the "household" - formed in Ukraine leads to a subsistence form of farming. This is confirmed by the fact that in 2018, on average, 20.7% of urban land is used for growing produce for own use only, while only 1.3% for own use and sale. In rural areas, on average, 15.7% of the land area of the farm is devoted to growing produce for own use only, while on average 10.0% is allocated for own use and sale. We utilize the data on the distribution of land area due to the paucity of reliable statistical estimates of the volume and share of products sold by farms on the market.

The risks of the spread of subsistence farming in terms of food security, social efficiency of rural production and development have been extensively explored in the works of EU researchers (Buchenrieder, 2009; Fritzsch, 2010; Davidova, 2011; Forgács, 2012; Alexandri, Luca and Kevorchian, 2015; Jędrzejczak-Gas, 2018) and illustrated by us above in the national context: low resource use efficiency, low technology and product safety, low contribution to community development, informal employment, etc.

Thus, in the conditions of globalization of the world agricultural market, digitization of all spheres of public life, strengthening of market relations in various sectors of the Ukrainian economy, including agrarian in the conditions of world competition, such a phenomenon as a semi-subsistence economy cannot continue to exist on such scales. Determining the right strategy for the further development of this form of business is the key to the effective development of the agricultural sector, rural areas and the national economy as a whole. Moreover, it is not only a matter of economic policy but of public policy in general, as the focus is on the well-being, safety and quality of life of more than 20 million Ukrainians.

Moreover, the EU has similar to Ukraine situation where about 70 per cent of EU holdings have an area of fewer than 5 hectares and around half are defined as semi-subsistent (Davidova, 2014). We emphasize that this idea defines, to a large extent, the current format of the EU's Common agricultural policy - CAP, where the problem of the spread of the semi-subsistence farms has been exacerbated with the Eastern European enlargement of the EU borders and the accession of new members. Today, the need to look for mechanisms to transform this form of business into market-adapted is recognized as one of the important tasks of the CAP and EU rural development policy (SECTION 1 Axis 1, Article 20 (i) Council Regulation (EC) No 1698/2005 of 20 September 2005).

Another important question is to see the perspective clearly and to act according to it employing all governance mechanisms available. The FAO, for example, estimates that global agricultural output will need to rise by at least 70 per cent by 2050 (FAO, 2009) and given the efficiency gap between large-scale and family farms the balance inevitable will be shifting towards former. The CAP's direct payments slow this shift, but "cannot, in the long run, prevent the structure of EU agriculture evolving to an industry where the overwhelming bulk of production is generated by larger- scale, capital intensive farms" (Rickard, 2015, p. 51)

For Ukraine, the urgency and importance of overcoming this problem also lie in the fact that restructuring of farming should be seen as an important component of market transformation and a necessary condition for the success of land reform aimed at the effective use of all productive means by market-oriented users (Lerman, Csaki and Feder, 2002).

The paper contributes to the literature in several ways. The study introduces into the English language scholarly literature Ukraine's case of semi-subsistence farming (hereinafter referred to as SSF), covering the decade long period (2008-2018) of its evolution in Ukraine. Doing so, the paper put on the map of SSF literature the biggest (in terms of area) country in Europe rich on the fertile ground (black soil). Instigated by Europe's CAP policy and its implementation, the study seeks to and delivers, based on the wealth of statistical data, to identify the factors that have a positive impact on the commercialization of the SSF in Ukraine. The findings of the paper due to similar institutional and cultural settings are applicable to the host of other countries sharing common past with Ukraine.

This paper proceeds by presenting the literature review in Section 2. After that, Section 3 presents the research methods, followed by the presentation of the main findings in Section 4. Finally, Section 5 brings the conclusions, highlighting the main findings as well as theoretical and practical implications, and venues for future research.

Literature review

As mentioned above, the need to overcome the problem of subsistence and the spread of subsistence farming, in particular through the introduction of measures to commercialize such farms, is one of the objectives of the CAP and EU rural development policy (SECTION 1 Axis 1, Article 20 (i) Council Regulation (EC) No 1698/2005 of 20 September 2005). At the same time, other potential directions for transforming farms are offered: by integrating them into larger-scale companies or by maintaining the existing status quo (mainly through the social, cultural and environmental function of farms) (Davidova, 2011). Some tools within the outlined areas have also been introduced in the EU CAP (EUROPEAN PARLIAMENT 2013), but it is obvious from the results of the CAP implementation that this is not a one-size-fits-all situation (EUROPEAN PARLIAMENT 2013). An effective policy aimed at overcoming the SSF path dependence should study the rationale, reasons and motives that determine the involvement of the people in conducting this form of farms.

The causes of the emergence and spread of such a phenomenon as semi-subsistence farming have not yet been fully established (Buchenrieder, 2009). Some studies (Fredriksson et al., 2016) indicate that the need for subsistence farming increases as the economic burden on its members' increases, while alternative (off-farm) income reduces the need for subsistence consumption and increases the volume of products consumed/sold in the market (Fredriksson et al., 2016; Csata, 2018), and therefore is a factor of the commercialization of farm operations. Davidova notes that the SSF is a consequence of market imperfection, but market-oriented subsistence farms and subsistence-oriented farmers can be distinguished. The former are highly motivated to produce to the market, while the leftovers are consumed, they are more responsive to market and political signals (Davidova, 2011, p. 505).

Equally important is the role of socio-cultural factors. The mentality is one of the reasons for maintaining the SSF in Moldova (WORLD BANK 2016). In this case, the prevailing distrust of the population in the formal institutions and the need to create a 'cushion' against poverty in an inadequate state welfare system determine the dominance of the SSF in Moldova (WORLD BANK 2016, p. 27). From this stems low activity in the land market, while the land is considered as a stock and a source of constant income (WORLD BANK 2016). Summarizing the findings of research by scholars on this problem in Hungary, Moldova, Romania (Giurca, 2008; Fritzsch, 2010; Forgács, 2012; Alexandri, Luca and Kevorchian, 2015), we emphasize that the common problem is the moral and ethical basis running a semi-subsistence farm in a semi-legal form, which consists in efforts to avoid taxation and exploit the opportunities available to them while avoiding responsibility for community development, paternalistic attitudes (Strochenko, 2016).

Among the reasons for the spread of the SSF in the Eastern European area can be distinguished historical and cultural, due to the dominance of the socialist system. In this case, the imperfection of the relations (incompleteness of transformational accomplishments) regarding the disposal of the land, which was transferred to private hands, raises the problem of SSF. In particular, Lerman, Csaki and Feder point out that the rationing and privatization of land must go hand in hand with ensuring the free movement of rights to these land (sale, lease), emphasizing that this is a prerequisite for effective land relations reforms in post-socialist countries (Lerman, Csaki and Feder, 2002). At the same time, not all countries implemented these transformations on time (Lerman, 2012), including Ukraine.

After all, the above mentioned are factors of an external nature, formed by general historical, cultural, organizational, political, and socio-economic conditions. At the same time, several internal factors determine a person's (landowner's) predisposition to forms of land use. These factors include, but are not limited to, age, level of education, psychological characteristics, etc. Depending on these factors, Buchenrieder et al. (2009) identified in their work the types of SSF owners such as 1) Rural pensioners, 2) Farmers, 3) Rural diversifiers and 4) Rural newcomers, modelling different policy strategies aimed at improving economic efficiency for each type of SSF. Combining

external factors and internal characteristics of household owners, Davidova (2011) identifies the following types of farmers: (i) farmers pushed to subsistence by market imperfections and an underdeveloped social safety net for whom semi-subsistence is a coping strategy; (ii) part-time farmers with other gainful activities; (iii) semi-subsistence farmers by choice, sometimes known as hobby or lifestyle farmers (Davidova, 2011, p. 505). Despite the differences in those approaches, researchers are united that SSF is a heterogeneous group of farm owners with different motivation and degree of aptitude for agriculture, which determines the difficulty of finding effective and efficient measures of political regulation (Buchenrieder, 2009; Davidova, 2014).

Given the scale of the spread of subsistence farming in Ukraine, the risks of neglecting this problem in the area of policy decisions on agriculture and rural development, and the paucity of research related to it (although some aspects of this problem are explored in Strochenko, 2016; Strochenko, 2017; socio-economic and legal problems of PPH functioning were investigated in the works of Svynous (2009), there is an objective need to study the factors that influence the propagation and preservation of semi-subsistence farming as well as the identification of the factors that have a positive impact on the commercialization of the activities of households as the main producer of end-use agricultural products in the country. All those defines the main purpose of this study and, in our view, should lay the groundwork for formulating effective policies aimed at the organizational transformation in agricultural production and rural economy under the current conditions: European integration, expansion of Ukraine in the world agri-food market, market reforms and others. It is our understanding that the results of the paper due to shared institutional settings are applicable to the numerous other jurisdictions who are on the same footing with Ukraine.

Materials and methods

Our method is analytical logic based on official statistics underpinned by the correlation analysis. Official statistics provided by the State Statistics Service of Ukraine were used in the paper. Applying the correlation analysis, the relationship between the trends and the main characteristics of agricultural activity of households in regions as well as socio-economic conditions of regions development is investigated. Based on a comparison of changes in the basic parameters characterizing the agricultural activity of farms over time, structural changes in the private sector of the agricultural sector of the country are established.

Results and discussions

Semi subsistence framing requires a certain resource base - land in ownership or use. Available land has both urban (3376.0 thousand in 2018) and rural (4799.8 thousand in 2018) households in Ukraine. Of course, owning land does not necessarily mean cultivating it directly by the owner, and therefore, unlike to the case of livestock, poultry and bees households, it does not mean becoming a household model of subsistence farming. However, the availability of land is a prerequisite for the formation of a

layer of SSF. So, let's examine the socio-economic factors that have an impact on the dynamics of the number of landowners in the regional context and the way they use their land (Table 1).

Table 1. Results of the correlation analysis of the relationship between the spread of subsistence farming in regions with socio-economic conditions for regional development, 2018

Indicator	Share of households located in urban areas, %	Number of households with land plots, thousand units	Share of households that have land plots	Number of households keeping cattle, poultry and bees, thousand units	Percentage of households keeping livestock, poultry, bees
Number of households, total, thousand units	0,73	0,89	-0,81	0,10	-0,79
Number of households located in urban settlements, thousand units	0,83	0,82	-0,84	-0,09	-0,84
Share of households located in urban areas, %	1,0	0,51	-0,80	-0,42	-0,90
Number of households located in rural settlements, thousand units	-0,28	0,56	-0,10	0,85	0,06
Average household size, persons	-0,65	-0,32	0,33	0,24	0,55
Number of households without a single worker, thousand units	0,77	0,86	-0,74	0,00	-0,79
Percentage of households with workers, %	0,22	-0,07	0,11	-0,25	-0,08
Average number of employees per farm, persons	-0,38	-0,02	0,05	0,30	0,24
The coefficient of economic load per worker, times	-0,22	-0,35	0,32	-0,15	0,31
The level of economic activity at the age of 15-70 years, %	0,29	0,04	-0,12	-0,09	-0,21
Unemployment rate as a percentage of economically active population of 15-70 years, %	0,05	-0,37	0,29	-0,37	0,18
Percentage of informally employed population as % to employed population, %	-0,54	-0,56	0,50	-0,01	0,59
The average area of land (in hundredth parts of a hectare) used by the farm	0,54	-0,17	-0,32	-0,62	-0,47
Distribution of land area by the direction of its use, %					
for the grow of produce only for their own needs	-0,48	-0,07	0,23	0,47	0,47
for the grow of produce for own needs and for sale	-0,48	-0,66	0,45	-0,25	0,50
leased out	0,60	0,29	-0,37	-0,33	-0,60
for leisure only	0,00	0,01	-0,07	0,16	0,09
just started to master	-0,42	-0,38	0,46	0,08	0,55
The number of Personal peasant households (PPH), thousand units	-0,59	0,29	0,22	0,84	0,39
The area of land used by PPH, thousand hectares, including:	0,28	0,29	-0,56	0,08	-0,39

Indicator	Share of households located in urban areas, %	Number of households with land plots, thousand units	Share of households that have land plots	Number of households keeping cattle, poultry and bees, thousand units	Percentage of households keeping livestock, poultry, bees
• for the construction and maintenance of a dwelling house, outbuildings and structures	-0,54	0,32	0,19	0,79	0,35
• for the conduct of personal peasant households	-0,39	0,00	0,10	0,53	0,35
• for conducting commodity agricultural production	0,61	0,26	-0,68	-0,33	-0,66
• of which were rented	0,74	0,31	-0,70	-0,46	-0,75

Source: calculated by data (SSSU) and data from http://www.ukrstat.gov.ua/

As an introduction to your analysis, we would like to note that, by examining both absolute and relative indicators of land use, we try to: 1) find out whether there is a relationship between the socio-economic conditions of the region's development and the dynamics of the number of households with land and households engaged in animal husbandry; 2) to find out whether there is a link between the socio-economic conditions of the region's development and the prevalence (proxy: the share in the total number of households in the region) of households with land and households engaged in animal husbandry.

Our analysis based on the calculation of the correlation coefficients, allows us to draw the following conclusions:

1. There is a close and positive relationship between the number of households in the region and the number of households with land (0.89). Close but inverse relationship exists between the number of households and the share of those who have land (-0.81). From this, we can conclude that in regions with more households (more densely populated) such phenomenon as land ownership will be less common. The same applies to households keeping cattle, poultry and bees (-0.79);
2. The relationship between the level of urbanization (share of households in urban settlements) and the number of households having land plots is positive, albeit of medium intensity, but given the degree and nature of the relationship between urbanization level and land ownership (-0.8) it can be inferred that with increasing urbanization in the region there is a decrease in the prevalence of such phenomenon as land ownership. The same is true for the number of livestock households (-0.42) and the prevalence of this phenomenon (-0.9);
3. The land ownership is characteristic of both rural and urban areas. At the same time, the phenomenon of cattle, poultry and beekeeping is characteristic of regions

with lower levels of urbanization (-0.42). With the increase in the number of rural households in the region leads to a growing number of livestock holding households (0.85).

4. With the increase in the average household size in the region, there is a decrease in the number of households with land (-0.32), but an increase in the prevalence of this phenomenon (0.33). Commenting on these results, it should be noted that larger average household size is typical for rural areas. This, to some extent, explains together with the above comments such results, and should also be taken into account when assessing the degree and nature of the relationship between the average size of the households and the number and prevalence of such a phenomenon as household keeping livestock, poultry and bees (0,24 and 0.55, respectively).

5. In regions with a difficult socio-economic situation (higher proportion of households without workers, a higher ratio of economic burden per worker), land tenure is more common (0.11 and 0.32, respectively). At the same time, the proportion of households with no workers is reversely related, although not significantly to the number of livestock households and the prevalence of this phenomenon (-0.25 and -0.08, respectively). With increasing labour availability (the average number of employees per farm) grows also the number of livestock households (0.3) and the prevalence of this phenomenon (0.24). It should be emphasized that the proportion of households without workers, although not insignificant, is related to the level of urbanization (0.22). Therefore, that corroborates our findings regarding the link between workforce availability and livestock farming and is not predicated on the overall difficult situation in rural Ukraine.

6. The economic burden is higher in rural areas, and this explains the positive (although insignificant) link of this indicator and the prevalence of land ownership and animal keeping (0.32 and 0.31, respectively), although, in our opinion, this does not preclude some interdependence of those phenomena.

7. It is worth noting that the number, as well as the prevalence of land ownership as well as keeping animals by households, is only insignificantly correlated with levels of economic activity and unemployment. Unemployment is a "universal phenomenon" (in terms of universality for rural and urban areas) and even more positively related to the level of urbanization (albeit not significantly - 0.05). Therefore, as it (the unemployment rate) rises in the region, the number of households with the land is decreasing, although the prevalence of this phenomenon is increasing (-0.37 and 0.29, respectively). At the same time, the number of households keeping livestock, poultry and bees is also decreasing (-0.37).

8. Informal employment is positively, although indirectly related to the proportion of rural households (0.54), this can explain the significance of the correlation coefficients between the share of the informally employed population and the prevalence of land tenure and households that keep animals (since these phenomena are common in rural areas) - 0.5 and 0.59, respectively.

9. As the level of urbanization increases, the average land area of a household grows (0.54), with most of it being used for renting (0.6), while decreasing the proportion allocated for growing produce for own use only (- 0.48), for own use and sale (-0.48).

10. The larger the share of households that have land, the greater the proportion of space allocated for growing produce for their own use and sale (0.45). The same is true for the prevalence of livestock farming in households (0.5).

11. The value of the correlation coefficient between the allocation of the share of land used only for the cultivation of produce for own use and the number and prevalence of livestock households (0.47 and 0.47) indicates that such farms are predominantly used the land for self-sufficiency purpose, both in rural and urban settlements.

12. With increasing urbanization, the number of households is decreasing (-0.59), although such farms are larger, as there is a positive (albeit mediocre 0.29) relationship between the size of the total land area of the HP in the region. In the more urbanized territories, larger areas of HPs allocate most of the area for agricultural commodity production (0.61), actively using leased land (0.74).

13. The more widespread in the region is land ownership and livestock farming (regions with less urbanization), the smaller the share of land used in commodity production (-0.68 and -0.66). However, this is not generally the case for livestock farms. They mainly use the land area to maintain a house and a household. However, for rural areas (where livestock farms are more prevalent), this relationship is mediocre (0.35 and 0.35), whereas in general, and thus more closely for urban areas, its closeness is increasing (0.79 and 0, 53, respectively). Obviously, with the increase in both the number and the prevalence of livestock farms, allotment of land for commodity production is shrinking, which suggests that such farms are predominantly geared to meeting their own food needs.

Considering that the availability of land is not directly related to subsistence farming, let us analyze the features (causes and extent) of subsistence farming in urban and rural settlements. However, we will first of all comment on the general trends in the dynamics of indicators on the functioning of farms in rural and urban settlements (Table 2).

Table 2. Profile of households' plots in rural and urban settlements, 2008, 2018

Indicator	Located in rural settlements		Located in urban areas	
	2008	2018	2008	2018
Number of households, thousand	5334,2	4873,6	11864,8	10061,3
Average size, persons	2,74	2,67	2,54	2,54
Percentage of households without workers	50,2	44,2	28,9	31,2
Average number of employees per household, persons	0,8	0,9	1,2	1,1
The coefficient of economic load on a working member of the farm, times	3,41	3,01	2,09	2,30

Indicator	Located in rural settlements		Located in urban areas	
	2008	2018	2008	2018
Share of expenditure on food in expenses, %	55,4	44,60	49,6	49,80
Share of remuneration and income from entrepreneurship and self-employment in aggregate resources, %	36,4	47,00	61,4	67,30
Personal peasant households having land plots, thousand	5262,6	4799,8	4454,7	3376,0
Share of households with land, %	98,66	98,49	37,55	33,55
The average size of the land, in hundredth parts of a hectare	314,3	*292,1*	21,1	*46,9*
Share of households keeping cattle, poultry and bees, %	80,9	76,0	9,2	8,1
Distribution of land area by type of household use (among households having land and using it by direction), %				
for the growing of produce only for their own needs	13	15,7	42,3	20,7
for the growing of produce for own needs and sale	16,4	10,0	3,9	1,3
leased out	69,6	73,2	52,8	77,3
for leisure only	0	0,0	0,2	0,1
just started to master	1	1,1	0,8	0,6

Source: calculated by data (SSSU) and data from http://www.ukrstat.gov.ua/

Therefore, as the data show, there is a reduction in the number of households in general as well as of HP in rural and urban areas. Particularly notable is the decrease in the proportion of the latter in urban settlements (by 4.0%). In this case, the average size of the land plot in a rural area decreases (by 22.2 hundredth parts of a hectare), but almost twice the average size of a plot of an urban household increases. The share of households keeping livestock, poultry and bees in rural and urban settlements is reduced; rural households are becoming more oriented on semi-subsistence (by the proportion of land allocated for cultivation for their own needs), reducing the proportion of land used for the commercial aim. The same is true for urban households, which, besides, have significantly (more than 2 times) reduced the proportion of land reserved for their own food needs. Distinctive for rural and urban households is the tendency to lease out the land. This, in turn, is one way of overcoming the naturalization of economic activity (EU Policy Review).

Therefore, considering the significant differences in the directions of land use in urban and rural settlements, as well as the difference in socio-economic conditions of urban and rural territories development, let us examine what factors influence the transformation of semi-subsistence households in urban areas (*Table 3*).

The number of subsistence farms in urban settlements (those with land plots) correlates closely and positively with the number of urban households in general (0.97). At the same time, the dynamics of the prevalence of this phenomenon is not closely related

to the dynamics of the number of households. Indeed, over time, the proportion of subsistence farms in urban settlements has decreased: 33.55% in 2018 versus 37.55% in 2018 (*Table 2*).

What are the factors that matter here? The reduction in the number and proportion of households with the land is closely correlated with the increase in the proportion of households without any single worker (-0.71). In 2008, there were 28.9% of such households and in 2018 - 31.2%. So, contrary to popular belief, that households are chiefly for retirees - in fact, this is not the case. Also, the reduction in the average number of workers per farm (from 1.2 in 2008 to 1.1 in 2018) correlates closely and positively with the reduction in the share of households (0.82) and slightly less closely with their number (0.57). An increase in the economic load ratio per working member of the household is closely linked to a decrease in the number (-0.92) and the prevalence (-0.87) of households' plots.

Table 3. Results of the correlation analysis of the relation between the characteristics of HPs in urban settlements with socio-economic conditions of urban settlements development, 2008-2018

Indicator	Number of urban households, thsd.	Average size, persons	Share of households without a single worker,	Average number of employees per household, persons	The coefficient of economic burden on a working member of the farm, times	Share of expenditure on foodstuffs, in expenditure, %	Share of remuneration and income from entrepreneurship and self-employment in aggregate resources, %	Households with land, thousand units	Share of households with land, %	The average size of the land plot, in hundredth parts of a hectare	Share of households keeping cattle, poultry and bees, %
PPH having land plots, thousand	0,97	-0,37	-0,71	0,57	-0,92	0,08	-0,51	1,00	0,89	-0,74	0,21
Share of households with land in the total number of urban households, %	0,75	0,02	-0,71	0,82	-0,87	-0,11	-0,58	0,89	1,00	-0,76	0,44
The average size of the land plot, in hundredth parts of a hectare	-0,66	0,16	0,69	-0,81	0,89	0,20	0,31	-0,74	-0,76	1,00	-0,03

Indicator	Number of urban households, thsd.	Average size, persons	Share of households without a single worker,	Average number of employees per household, persons	The coefficient of economic burden on a working member of the farm, times	Share of expenditure on foodstuffs, in expenditure, %	Share of remuneration and income from entrepreneurship and self-employment in aggregate resources, %	Households with land, thousand units	Share of households with land, %	The average size of the land plot, in hundredth parts of a hectare	Share of households keeping cattle, poultry and bees, %
Share of households keeping cattle, poultry and bees, %	0,07	0,22	-0,22	0,40	-0,04	-0,08	-0,53	0,21	0,44	-0,03	1,00
Distribution of land by type of household use, %, including:											
for the grow of produce only for their own needs	0,54	0,09	-0,70	0,90	-0,86	-0,33	-0,25	0,66	0,78	-0,96	0,13
for the grow of produce for own needs and for sale	0,38	0,16	-0,15	-0,04	-0,23	0,30	-0,24	0,39	0,33	0,16	0,06
leased out	-0,68	-0,19	0,58	-0,57	0,75	-0,03	0,38	-0,76	-0,79	0,49	-0,15
for leisure only	0,39	0,36	-0,64	1,00	-0,72	-0,46	-0,25	0,57	0,82	-0,81	0,40
just started to master	0,40	0,01	-0,31	0,69	-0,45	-0,18	-0,41	0,52	0,65	-0,55	0,40

Source: calculated by data (SSSU) and data from http://www.ukrstat.gov.ua/

The share of food expenditure in household's expenditure is insignificant, although inversely related to the prevalence of households (-0.11). Such a somewhat unexpected result can be explained by the fact that lower income and, consequently, a higher share of food costs are typical for households where there are no workers (retired), and with the increase in the number of such farms, the share of subsidiaries decreases significantly (-0.71). At the same time, an indirect inverse relationship exists between the share of active income in total household resources and the number and prevalence of households (-0.51 and -0.58, respectively). Consequently, as other income opportunities expand, the propensity to farming in urban areas is reduced.

Regarding the average size of the land, it should be noted that it increases as the households prevalence decreases (-0.76, which is logical, since it is caused by limited

land resources). In 2008, the average size of the land was 21.1 hundredth parts of a hectare, and in 2018 - 46.9. The majority of the land is leased out (-0.79). The larger the size of the land plot, the smaller the amount allocated for growing produce for its own needs (-0.96). Similarly, in the absence of workers and with increasing economic burden, less and less of the area is allocated for food self-sufficiency (-0.7 and -0.86, respectively). With the increase in the number of working members of the farm, the land is mainly used for self-sufficiency in food (0.9) and leisure activity (1.0). As the share of active income in total household resources increases, the share of leased out land increases (0.38). The prevalence of cattle and poultry holdings is decreasing as the average number of employees per household decreases (0.4) and the share of active income in total household resources increases (-0.53).

Therefore, in urban households, households (owning a land plot) are not a form of food self-sufficiency in a difficult economic situation. This conclusion can be drawn from the fact that an increase in the economic burden, an increase in the share of households without any single worker, and an increase in the share of food costs in expenses leads to the decreasing propensity to maintain subsistence households (as in the number of households, and the allocation of land plots to provide for their own food needs). At the same time, it is confirmed by the thesis (Fredriksson et al., 2016) that with the increase of other incomes (in other spheres) the propensity to do subsistence farming decreases. It should also be noted that for urban territories (households with land plots), a typical trend is an increase in the average size of a land plot with the leasing out of an increasing part of it. At the same time, urban households are not indicative of the transformation of subsistence farming into market-oriented forms. That is due to the traditions of semi-subsistence farming in urban settlements with the aim, first of all, to satisfy their own needs for food and leisure, and on the other hand - because of the small size of land plots. So let us further explore what factors are important in terms of facilitating the market transformation of subsistence farms in rural areas (*Table 4*).

Table 4. Results of the correlation analysis of the relationship between subsistence households in rural settlements with socio-economic conditions for rural settlements development, 2008-2018

Indicator	Number of households, thsd.	Average size, persons	Share of households without workers, %	Average number of employees per household, persons	The coefficient of economic load on a working member of the farm, times	Share of expenditure on food in expenses, %	Share of remuneration and income from entrepreneurship and self-employment in aggregate resources, %	Households with land, thousand	Share of households with land,%	The average size of the land plot, in hundredth parts of a hectare	Share of households keeping cattle, poultry and bees, %
PPH having land plots, thousand	1,00	0,90	0,64	-0,35	0,60	0,53	-0,54	1,00	0,47	0,19	0,62
Share of households with land, %	0,38	0,56	0,28	-0,44	0,33	-0,24	-0,13	0,47	1,00	0,62	0,67
The average size of the land plot, in hundredth parts of a hectare	0,13	0,26	0,39	-0,48	0,51	-0,41	-0,01	0,19	0,62	1,00	0,55
Share of households keeping cattle, poultry and bees, %	0,58	0,67	0,71	-0,66	0,63	0,17	-0,54	0,62	0,67	0,55	1,00
Distribution of land area by type of household use, %											
for the grow of produce only for their own needs	-0,87	-0,77	-0,59	0,41	-0,67	-0,37	0,45	-0,88	-0,49	-0,52	-0,61
for the grow of produce for own needs and for sale	0,68	0,66	0,64	-0,56	0,74	0,45	-0,69	0,69	0,41	0,55	0,69
leased out	-0,29	-0,31	-0,59	0,63	-0,70	-0,36	0,70	-0,29	-0,17	-0,49	-0,53
just started to master	-0,11	-0,26	0,43	-0,41	0,51	-0,11	0,00	-0,12	-0,19	0,30	-0,15

Source: calculated by data (SSSU) and data from http://www.ukrstat.gov.ua/

Thus, as evidenced by the results of the calculations (*Table 4*) and the available statistics (*Table 2*), the overall tendency to reduce the number of households in rural areas with land plots is closely and positively correlated with a decrease in the average household size (0,9), a decrease in the proportion of households without employed persons (0.64) and a reduction in the economic burden per worker employed in the household (0.6). Also, the decrease in the share of expenditures on food in household expenditures is slightly but positively correlated with the number of holdings that have land (0.53). An increase in the share of active income in total household resources is also associated with a decrease in the number of land-owned households. But the greatest impact on their number has a decrease in the total number of rural households (1.0), i.e. depopulation of rural areas. Therefore, let us examine the influence of factors on the prevalence of such households.

With the increase in the average number of employees, the share of households having land plots declines on average (-0.44). The average size of the land plot is positively, although not strongly related to the share of households with land plots (0.62), and is lower, the greater the number of people working on the farm (-0.48), and more share of expenditures on food in expenses of the household (-0.41). Also, the average land size is positively and moderately related to the factor of the economic load: the smaller it is, the smaller the land size (0.51).

The prevalence of such phenomenon as the animal farm is closely and positively correlated with the average household size (0.67) and the share of households without employed persons (0.71), whereas with the increase in the average number of employees there is a tendency to livestock farming decreases (-0.66). The same is true for increasing the share of active income in total household resources (-0.54). As the economic burden decreases, the prevalence of animal husbandry also decreases (0.63).

An important feature of a household is how it uses land. As the average size of the household decreases, the share of the area used to support its food needs increases (-0.77). This is also true for the number of households without employed persons (-0.59) and the coefficient of economic burden (-0.67). With the decrease in the share of food expenditures (which can be construed as a rise in cash income), households use the land more to cover their own food needs (-0.37) and lease it out (-0.36). Also close and positive is the relationship between the factor of economic load and the more use of land for growing products, including for sale (0.74). The average number of employees positively but moderately correlates with the renting out of the land (0.63), the provision of their own food needs (0.41), but inversely - with its use for growing products, including for sale (-0.56). So, let us emphasize based on abovementioned that the commercialization of households is closely associated:

- With the proportion of households without workers - the smaller this share is, the less market-oriented the farms are (0.64);
- With the coefficient of economic load - the higher it is, the more market-oriented is the market activity of the households (0.74);

- With the share of food expenditure in all expenditures - the higher it is, the more market-oriented the household is (0.45);
- With an average number of employees in the farm - the higher it is, the less market-driven the farm (-0.56);
- With the share of active income in aggregate resources (the higher it is, the less market-active is the household -0.69).

So, farms that use the land to a greater extent for growing produce for their use and sale are non-working households. In the event of a socio-economic recovery when greater employment opportunities arise, those households redirect their resources to support their own food needs and rent the land out.

Finally, let us examine how the socio-economic factors of regional development affect the activities and development of personal peasant households - a certain legal form of agricultural activity by households, which comes closest to the market-oriented form of activities (*Table 5*). While the households are more hobbies, the PPHs are a lifestyle, a form of societal existence, as it not only provides for basic needs but also - a self-employed job.

Table 5. Results of the correlation analysis of the relationship between the characteristics of maintaining PPHs with the socio-economic conditions of regional development, 2018

Indicator	The number of PPH, thousand units	Area of land, thousand hectares including for:	for the construction and maintenance of a dwelling house, outbuildings and structures	for the conduct of personal peasant farming	for conducting commodity agricultural production	of which were rented
Number of households located in urban settlements, thousand units	-0,14	0,43	-0,11	-0,18	0,57	0,66
Number of households located in rural settlements, thousand units	0,89	0,27	0,86	0,46	-0,11	-0,24
Share of households located in rural settlements, %	0,59	-0,28	0,54	0,39	-0,61	-0,74
Average household size, persons	0,50	0,04	0,44	0,42	-0,27	-0,46
Number of households with land, thousand units	0,29	0,29	0,32	0,00	0,26	0,31
Number of households keeping cattle, poultry and bees, thousand units	0,84	0,08	0,79	0,53	-0,33	-0,46
Number of households without a single worker, thousand units	-0,09	0,37	-0,01	-0,11	0,46	0,56
Average number of employees per households, persons	0,55	0,03	0,39	0,08	-0,11	-0,18

Indicator	The number of PPH, thousand units	Area of land, thousand hectares including for:	for the construction and maintenance of a dwelling house, outbuildings and structures	for the conduct of personal peasant farming	for conducting commodity agricultural production	of which were rented
The coefficient of economic load per worker, times	-0,20	-0,01	-0,04	0,38	-0,19	-0,29
The level of economic activity at the age of 15-70 years, %	-0,28	-0,16	-0,29	-0,62	0,21	0,28
Unemployment rate as a percentage of economically active population of 15-70 years, %	-0,54	-0,32	-0,48	-0,22	-0,12	-0,03
Percentage of informally employed population to employed population, %	0,01	-0,14	0,05	0,03	-0,18	-0,34

Source: calculated by data (SSSU) and data from http://www.ukrstat.gov.ua/

The number of PPHs is closely related to the number of rural households in the regions (0.89). Although, this is not the case for PPHs land: as the share of rural households increases, the total area of farmland is reduced (-0.28), that is, with the increase in their number and share, the size decreases. The number of PPHs will be higher in those regions where the average farm size is larger (0.5) (which is typical for rural areas). PPHs are mainly livestock and poultry households (0.84). They are rather developed in regions where the average number of employees on one farm is higher (0.55). It is interesting that as the unemployment rate increases, the number of PPHs will decline, meaning that this activity is not perceived as a proper alternative to a full day engagement (-0.54), but rather as a part-time employment. In regions where the number of households without a single worker is higher, the total area occupied by PPHs will be higher (0.37), this is also true in the case of urban households (0.43). At the same time, the area of PPH is more directed to commodity production with increasing level of urbanization, as well as with the increase in the number of households where there are no workers (0.46). In this case, these areas are formed through rented land (0.66 and 0.56, respectively). The number of PPHs, as noted above, correlates with the number of livestock, poultry and bee holdings (0.84). Moreover, with the increase in the number of such farms, PPH areas are allocated for the maintenance of a dwelling house (0.79) and conduct of personal peasant farming (0.53) but are eliminated from commodity production (-0.33) and rental relations (-0.46).

Conclusions

To sum up, we would like to emphasize that nowadays there is a decrease in the number of households involved in agricultural production both for food self-sufficiency and

for the production of products for sale in Ukraine. And there is not only an absolute reduction in the number of such farms but a reduction in their share in the total number of households, that is, the prevalence of this phenomenon. There are "subsistence" structural shifts in the sector, highlighted by Buchenrieder et al. (2009). At the same time, it is necessary to pay attention to the nature of these structural changes: the gradual disappearance of individualized agricultural production with the allocation of agricultural land for use by large agricultural producers. This poses a threat to the effective development of rural areas and the agricultural sector, as individual forms of farming are seen as the basis for the development of efficient agriculture in a market economy, in particular in European countries (Lerman, Csaki and Feder, 2002), and the emergence of such an economic model in Ukraine, was the main goal of the land reform started almost 20 years. Therefore, in the context of the need to tackle the problem of semi-subsistence farming, one should pay attention to another aspect of this problem - the lack of a strategy to support the establishment of a model of individual farming, which must counteract the risks of industrialized agro-production. After all, as the results of the analysis show, in the case of a revival of economic activity in rural areas (peripheral territories) as a result of the implementation of social policy measures, there will be a disappearance of the class of private small agricultural producers. This poses risks to food security, as it is these structures that make up the bulk of consumer basket products. So we should not throw out the baby along with the bath, to wit commercializing it to the point where there are only big-scale holdings left and strive to balance interests of big players with those of smaller producers and societal needs.

At the same time, the results of the conducted research give grounds to single out the general problems of domination of semi-subsistence economy in Ukraine and tendencies of development of such farms under different socio-economic conditions. We found that the commercialization of households is closely associated: 1) With the proportion of households without workers - the smaller this share is, the less market-oriented the farms are; 2) With a coefficient of economic burden - the higher it is, the more market-oriented is the market activity of the households; 3) With the share of food expenditure in all expenditures - the higher it is, the more market-oriented the household is; 4) With an average number of workers in the farm - the higher it is, the less market-driven the farm; 5) With the share of active income in aggregate resources - the higher it is, the less market-active is the household.

Factors that we have identified as those leading to the spread of the semi-subsistence farming should be matched by incentives mechanism in relevant government programs. On the governance level an understanding must come that the spread of SSF is unattainable in the long run, so irrespective of any now-days rationales growing demand for food, low efficiency of SSF and 'isolation' (in terms of taxes paid to community treasure) from local community needs determine palpable necessity to confront the spread of SSF with countermeasures on a policy level.

Out of this dichotomy 'commercialization or deeper self-sufficiency' as there couldn't be two victors, commercialization appears as a way forward for SSF. It is corroborated

by EU experience and the predicted future trends in society and agriculture. Although it must be wise and moderate commercialization which leaves the room for striving individuals farms so vital for agriculture.

An interesting possibility for further research that would complement the analysis pursued in the paper would be, to develop policy measures aimed at promoting the development of private farms from an existing number of market-oriented households, to conduct more in-depth qualitative studies needed to identify the rationale, motives and factors that determine the inclination of people of a particular age, in a particular locality to single out the path either of semi-subsistence farming or the commercialization of farm production activities.

Conflict of interests

The authors declare no conflict of interest.

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FOOD SECURITY AND COMPARATIVE ANALYSIS OF SITUATION IN SERBIA AND NEIGHBOURING COUNTRIES

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ABSTRACT

The concept of food security has expanded significantly over time, and due to its importance, it is on the list of priorities of the UN Sustainable Development Goals. The aim of this paper is to analyze the state of individual dimensions and key indicators of food security in Serbia and selected neighboring countries using the Global Food Security Index (GFSI). The index was created in 2012 by the Economist Intelligence Unit and it is calculated every year to measure the risk of food insecurity in individual countries. The latest data indicate that Serbia has the worst rank among the neighboring countries. The analysis showed that two GFSI indicators for Serbia (gross domestic product per capita and public expenditure on agriculture) are the worst evaluated and represent the main limitations of improving food security in Serbia.

Introduction

Food security is one of the UN Sustainable Development Goals (SDG) and the international community is committed to eliminate hunger and all forms of malnutrition by 2030 (UN, 2015; FAO, 2015). The number of inhabitants in the world is continuously increasing, and there is a tendency that an increasing share of the population lives in urban areas. Rapid technological development is accompanied by increasingly strong ties between individual economies, i.e. globalization. However, the world economy is not achieving the expected growth, especially in some countries, which, together with the existence of conflicts and political instability, causes pronounced migrations of population. Climate change and severe extremes are affecting agricultural productivity, rural environment and natural resources which cause the decline in number of farmers. All of this has led to major shifts in the way food is produced, distributed and consumed globally, and to new food security (FAO, 2019).

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The presence of hunger in the world is expressed by the prevalence of undernourishment. After decades of reducing hunger in the world, the trend of world hunger reverted in 2015, when the number of malnourished people increased. In the following years, the prevalence of undernourishment in total population is continuously around 11%, although in absolute terms this number is increasing. More than 820 million people in the world are still hungry, which is a significant challenge for achieving the Zero Hunger target by 2030(FAO, 2019). There is only a decade left and the latest data show that the aim is far from being fulfilled. Many countries have higher hunger level that in 2010, and some require urgent attention in reducing level of hunger (IFPRI, 2019).

The problem of quantity and quality of nutrition differs depending on the level of development of individual regions or economies. While the fight against undernourishment and malnutrition is a burning issue in developing regions, developed countries face problems such as overweight and obesity, food safety, and food waste in supermarkets, restaurants and households (Božić and Papić, 2019). It is estimated that over two billion people in the world do not have regular access to safe, nutritious and sufficient food, including 8% of the population in Northern America and Europe. At the same time, there is an increase in the number of obese and overweight people. It is estimated that in 2016 about 41 million children under the age of five (about 6%) were obese (FAO, 2017). "In 2016, 131 million children 5–9 years old, 207 million adolescents and 2 billion adults were overweight. About a third of overweight adolescents and adults, and 44% of overweight children aged 5–9 were obese." (FAO, 2019).

Measuring food security, i.e. the selection of adequate indicators, is a very complex issue. With the change of the concept of food security and the increasing number of dimensions that are included, the number and type of indicators that measure these aspects have changed (Božić and Papić, 2019).

This paper aims to analyze the state of food security and its individual dimensions in Serbia and selected neighbouring countries (Bulgaria, Romania, Hungary and Greece) in 2018 and 2019 by comparing the Global Food Security Index (GFSI). This is one of the most commonly used indicators that describe and measure different dimensions of food security. The starting hypothesis in this paper is that Serbia lags behind the selected neighbouring countries in terms of food security measured by the GFSI.

Materials and methods

During the research for this paper, foreign and domestic literature was used, and the reports of institutions dealing with food security issues, such as: IFPRI, FAO, EIU, UN, were analyzed.[3]

3 IFPRI – International Food Policy Research Institute, FAO – Food and Agriculture Organization of the United Nation, EIU-Economist Intelligence Unit, UN – United Nations.

The Global Food Security Index was used to analyze the state of food security in Serbia and chosen countries in the region. GFSI is an annual index created for comprehensive measurement and monitoring of food security, and its components in individual countries worldwide. It has been calculated since 2012 by the Economist Intelligence Unit (EIU). GFSI is a tool for measuring food security at the national level that includes indicators of affordability, availability, quality and food safety (EIU, 2017). The index is based on a large number of factors that affect the food system, i.e. the food security of the country, from political stability to climate threats.

A detailed methodology of calculating the GFSI index is presented in the next part of the paper. In addition to the analysis of documents, during the preparation of the paper, a comparative method was used in order to evaluate the position of Serbia in relation to the neighbouring countries.

Theoretical framework of research

The concept of food security has 'evolved, developed, multiplied and diversified' (Shaw, 2007). This concept first appeared in 1943 at a conference in Virginia, USA during World War II. During this conference, the idea was adopted that it is necessary to provide all people with a safe and adequate supply of food. Over time, the concept of food security becomes more complex, and in addition to availability of food, the issue of economic and physical access to food is introduced. Therefore, at the World Food Summit held in 1996, food security was defined as state where "all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

Starting from the previous definition of food security, four main dimensions of food security can be identified: availability, access, utilization and stability. These dimensions must be fulfilled simultaneously in order to achieve food security.

- Physical availability of food questions the supply and it determines if there is enough food present from production, reserves, market and net trade.
- Economic and physical access to food is related to level of households and it concerns whether or not households and individuals have sufficient access to food, assuming that the previous level is achieved and that there is enough food on national level.
- Food utilisation answers the question of maximizing the consumption of adequate nutrition and energy. It determines the nutritional status of individuals, which means that a person take sufficient energy and nutrient from the available and accessible food.
- Finally, stability of the other three dimensions over time questions if the whole system is stable, so households and individuals can have previous dimensions fulfilled continuously, and not on periodic basis. Stability can be threatened by climatic economic, social and political factors (FAO, 2019).

There are a large number of indicators that measure food (in)security. Hoddinott (1999) state that there are about 200 definitions and 450 indicators of food (in)security. Pangaribowo et al. (2013) emphasize that indicators can be separated into three groups that measure (1) the outcomes of food insecurity; (2)the drivers and risks of creating food insecurity (percentage of the population living below the poverty line, yield per hectare, hygienic conditions in the household, etc), and (3)the interventions in solving the problem of food insecurity. Indicators that are most commonly used are: FAO Indicator of Undernourishment, Global Hunger Index, calculated annually by the International Food Policy Research Institute; and the Global Food Security Index, which is calculated annually by the Economist Intelligence Unit (Božić and Papić, 2019).

After food crises in 2008 and 2011, EIU created the Global Food Security Index in 2012.It measures food security at national level. Aim is to assess risks and determine which countries are most and least vulnerable to food insecurity. This index measures food security comprehensively, trying to determine factors that affect it.

The GFSI is constructed from 34 underlying unique indicators that are grouped in indicators and then in three dimensions: Affordability, Availability and Quality & Safety (Table 1).

Table 1. Comparison of food security and GFSI conceptualisation

Standard Conceptualization of Food Security	GFSI concept
Physical availability	Affordability
Economic and physical access to food	Availability
Food utilisations	Quality and Food Safety
Stability	Natural Resources & Resilience(since 2017)

Source: Authors' modification based on Thomas et al., 2017

Additional adjustment factor, Natural Resources & Resilience, was added in 2017 iteration in order to capture the impact of climate change and natural resources on food security (EIU, 2017). This factor includes additional 7 indicators (Table 2). All indicators are scaled from zero to 100, where 100 is the most favourable score. The final value of the GFSI is a simple weighted average of first three category scores, while the Natural Resources & Resilience category is an adjustment factor. The fourth category serves to view how food security is changing when climate-related and natural resource risks are taken into account (EIU, 2019).

Affordability is related to the capacity of country's population to pay for food, both in times of stable and insecure food supply. Availability refers to country's capacity to produce and distribute food, and to provide self-sufficiency in food. It also shows how easy it is for consumers to access food products.

Quality and safety represents "the nutritional quality of average diets and the food safety environment of each country" (Thomas et al., 2017). Safety and quality of food affect health and socio-economic environment of a country, and it can be measured by

examining nutritional standards applied in the country, diet diversification and protein quality provided to people (Ali, 2018). Natural Resources and Resilience assesses a country's exposure to climate change, and sensitivity to natural resources, i.e. it evaluates how country is reacting to such risks (EIU, 2019).

The GFSI index can be analysed using adjustment factor or without it. The first three dimensions give a fair evaluation of food security in the moment of analysis, but they do not show the stability of situation. Including correction (adjustment) factor related to natural resources and climate changes provide an insight to food security, but it "also reflects future stability in the index" (Ali, 2018).

In addition to changes made in 2017 (including dimension of Natural Resources and Resilience), in 2019 GFSI introduces new metrics indicators (as shown in Table 2). Although most indicators remain the same, it is not possible to compare 2019 data with previous years, with exception of 2018 where scores and ranking were updated to be directly comparable. Due to this, analysis in this paper was limited to 2018 and 2019.

Table 2. Conceptural framework of the GFSI index in 2019 iteration

Affordability	Availability	Quality & Safety	Natural Resources & Resilience
Change in average food costs	Sufficiency of supply (kcal/per capita/per day)	Dietary diversity	Exposure (temperature rise, drought, flooding, storm severity, sea level rise, commitment to managing exposure)
Proportion of population under global poverty line	Public expenditure on agricultural research and development	Nutritional standards	Water (quantity, quality)
Gross domestic product per capita (US$PPP)	Agricultural infrastructure	Micronutrient availability	Land (land degradation, grassland, forest change)
Agricultural import tariffs	Volatility of agricultural production	Protein quality	Oceans (ocean eutrophication, marine biodiversity, marine protected areas)
Presence of food safety-net programme	Political stability risk	Food safety	Sensitivity (Food import dependency, Dependence on natural capital, Disaster risk management)
Access to financing for farmers	Corruption		Adaptive capacity (early warning measures, national agricultural risk management system)
	Urban absorption capacity		Demographic stress (population growth, urbanisation)
	Food loss		

Source: Systematization of authors based on Economist Intelligence Unit, 2019.

The GFSI is calculated for 113 countries, which were selected based on regional diversity, economic importance, population size and with the aim to include regions around the globe. Countries with larger populations were selected so that a greater share of the global population is represented. Serbia is the only country included in

GFSI report from the ex-Yu territory. Following neighbouring countries are selected for comparison: Bulgaria, Romania, Hungary and Greece.

In addition to its comprehensiveness advantages, GFSI has certain weaknesses: a) the value of GFSI does not provide a clear picture of what factors led to the current result; b) there is no clear theoretical concept that explains why these indicators were chosen to represent the three basic dimensions of food security; and c) the quality and safety dimension only partially covered all aspects of food usability. Specifically, problems that exist in the environment and affect food (in)security, such as access to drinking water, health care, etc. have been completely neglected (Pangaribowo et al., 2013). Including the fourth dimension – Natural Resources & Resilience in the calculation of GFSI (2017), part of the mentioned weaknesses has been eliminated.

Results and Discussion

Comparative analysis of food security in Serbia and neighbouring countries

The Global Food Security Index (GFSI) was used to assess food security in Serbia and the neighbouring countries. Singapore and Ireland are the countries with the highest level of food security, followed by Switzerland, Finland and Norway (Table 3). The lowest value of GFSI is in countries that have overcome conflicts, such as Venezuela, Burundi and Yemen, which is also characterized by increasing dependence on food aid.

Serbia is ranked on 59th place with an index of 62.8.[4]All neighbouring countries, for which GFSI was calculated in 2019, have better rank in terms of food security. Among European countries, Serbia occupies the penultimate position and is ranked 25th (only Ukraine is ranked on lower position). The reduced GFSI score and worsened food security in 2019 compared to 2018 are characteristic only for Serbia and Romania from the analysed group of countries.

In 2017 the EIU included the dimension of natural resources and resilience in the calculation of the global food security index, in order to evaluate future threats to food security, especially climate change. According to this indicator, which includes issues such as droughts, floods and rising sea levels, land degradation, ocean eutrophication, etc. the Czech Republic is the best ranked, followed by Finland, Denmark and New Zealand.

When analyzing GFSI with included component risk of natural resources and resilience to climate change, it is evident that the overall score of GFSI is declining in all countries. By including the correction factor, Singapore dropped from the first to 12th position, and the value of the index decreased by 12.6 points (EIU, 2019). Ireland, Finland and Switzerland are the best ranked countries in the world in terms of food security which includes the risks of natural resources and resilience to climate change. According to the index calculated in this way, Serbia is ranked better by five places and placed on the 54th position, but still is the worst positioned of all neighbouring countries (Table 3).

4 Serbia is sharing rang 59 with Ghana and Morocco, which also have overall score 62.8.

The food system is highly susceptible to the effects of natural factors, particularly to climate change. The future of agriculture and global food production is highly dependent on natural resources. However, agriculture can also have harmful effects on the environment. Research shows that food production causes up to 30% of global greenhouse gas emissions and uses about 70% of total fresh water. Excessive use of chemicals such as nitrogen and phosphorus, used in fertilizers, are the cause of the increased water and soil pollution. Some countries suffer large food losses due to climate catastrophes (floods, droughts, earthquakes, storms, volcanic eruptions). Climate change will continue to affect the quality and safety of food as well as the deterioration of its nutritional values (EIU, 2019). Therefore, countries should establish systems to mitigate long-term effects, as well as effective early warning mechanisms to prepare for changing weather and climate events.

Table 3. Top five countries, Serbia and neighbouring countries according to GFSI in 2019

Country	Score		Rank		GFSI adjusted by the fourth dimension: Natural Resources & Resilience			
					Score		Rank	
	2019	Change 2019/2018	All countries	Europe	2019	Change in score without fouth dimension	2019	Change in ranking without fouth dimension
Singapore	87,4	0,0	1	-	74,8	-12,6	12	-11
Ireland	84,0	+0,6	2	1	77,9	-6,1	1	+1
USA	83,7	+0,6	3	-	75,6	-8,1	7	-4
Switzerland	83,1	0,0	4	2	77,3	-5,8	3	+1
Finland	82,9	0,0	=5*	3	77,5	-5,4	2	+3
Norway	82,9	+0,5	=5	3	76,5	-6,4	5	-
Bulgaria	66,2	+0,5	51	24	60,5	-5,7	47	+4
Hungary	72,7	+0,1	34	19	67,2	-5,5	28	+6
Romania	70,2	-0,2	38	21	64,3	-5,9	34	+4
Greece	73,4	+0,8	31	17	66,9	-6,5	29	+2
Serbia	**62,8**	**-0,4**	**=59**	**25**	**56,9**	**-5,9**	**54**	**+5**

* Sign "=" before the rank number means that the country share the rank with other countries with same score value

Source: Authors' processing and interpretation of data based on the Economist Intelligence Unit, GFSI 2019 and the EIU database

The analysis of food security according to certain dimensions (affordability, availability, quality and safety and natural resources & resilience) in Serbia and selected neighbouring countries indicates the existence of certain differences (Table 4).All neighbouring countries achieved a better score from Serbia for following three dimensions: affordability, availability and food safety. According to the availability, Serbia is also positioned on the lowest rank in relation to all components of food security.

The component Natural Resources and Resilience to adverse climate-related and other risks was included in the calculation of GFSI recently (in 2017) precisely because they pose long term threats and impact on food systems and food security across countries. With the value of this indicator of 62.2, Serbia is ranked significantly better compared to other components (on 37th place), but all analyzed neighbouring countries have higher values of this component.

Table 4. Values of GFSI and individual dimensions of food security for Serbia and selected neighbouring countries for 2019

	Serbia			
	Score		Rank (113)	
Overall	62,8		=59	
Affordability	73,9		52	
Availability	53,0		83	
Quality and Safety	61,8		56	
Natural Resources & Resilience	62,2		37	
Overall with Natural Resources & Resilience	56,9		54	
	Bulgaria		**Romania**	
	Score	Rank (113)	Score	Rank (113)
Overall	66,2	51	70,2	38
Affordability	79,0	36	79,3	34
Availability	54,2	81	64,3	36
Quality and Safety	66,8	48	64,1	52
Natural Resources & Resilience	65,3	=24	66,2	23
Overall with Natural Resources & Resilience	60,5	47	64,3	34
	Hungary		**Greece**	
	Score	Rank (113)	Score	Rank (113)
Overall	72,7	34	73,4	31
Affordability	80,8	31	77,8	=39
Availability	66,1	30	64,9	33
Quality and Safety	70,5	43	86.0	11
Natural Resources & Resilience	69,5	12	64,8	=28
Overall with Natural Resources & Resilience	67,2	28	66,9	29

Source: Economist Intelligence Unit, GFSI 2019 and EIU database

Comparative analysis of basic indicators of food security in Serbia and neighbouring countries – strengths and weaknesses

The given analysis provides an opportunity to single out indicators that contribute to the improvement and stability of a food system and those that represent the major weaknesses. Among indicators that have score over 75, which are marked as "strengths" and contribute to the improvement of food security, is included an indicator that assesses the presence and quality of food safety net programmes. Another indicator with score

above 90 is the change in average food costs - which track the change of the costs of average market basket of food products (2010 = 100) (Table 5).

A sharp rise in costs of the average market basket of food products may indicate a decline in food affordability.[5] In "strengths" are also included: indicator that measures the proportion of population under global poverty line, calculated as the percentage of the population living on less than $ 3.20 per day, expressed in purchasing power parity (PPP for 2011); and indicator related to the increase of urban absorption capacity, which affects the ability to ensure food availability. Indicators related to food losses and food safety[6] have high, but slightly lower values. This group of indicators also includes two that contribute to increased access to food (agricultural import tariffs and access to financing for farmers from the public sector).Lower agricultural tariffs may affect lower food import costs as well as food costs for consumers. Access to financing for farmers leads to increased farmers' productivity and ability to provide better access to food. This is one of the indicators that most correlates with overall food security.

Table 5. Food security indicators (GFSI) that represent the strengths* in Serbia and selected countries in the region in 2019

	Indicator	Serbia	Bulgaria	Romania	Hungary	Greece	All countries average
1.5	Presence and quality of food safety net programmes	100.0	100.0	100.0	100.0	100.0	74.3
1.1	Change in average food cost	98.2	98.9	99.5	98.7	99.5	96.4
1.2	Proportion of population under global poverty line	92.7	98.0	93.0	99.3	98.1	83.5
2.7	Urban absorption capacity	91.4	92.1	98.6	95.1	85.0	82.0
3.5	Food safety	89.9	99.4	100.0	100.0	100.0	82.5
2.8	Food loss	89.4	-	95.3	93.5	87.1	84.9
1.4	Agricultural import tariffs	78.0	81.8	81.1	81.1	81.1	75.6
1.6	Access to financing for farmer	75.0	100.0	100.0	100.0	75.0	63.9

*"Strengths" are defined as all indicators with score above 75.0 (EIU Database, GFSI 2019)

Source: Authors' processing and interpretation of data based on EIU Database and GFSI 2019

Indicators that contribute to Serbia's food system and food security are also "strengths" in other countries included in the analysis. In this group of indicators with a score above 75.0, only Bulgaria has one indicator less (higher food losses), while other neighbouring countries have larger number of indicators that represent "strengths". The same indicators

5 Over the last five years, relative food costs have been increasing worldwide, leading to a steady increase in the price of the average food basket (EIU, 2019).

6 These indicators include existence of an agency to ensure safety and health of food, access to cooling possibilities (cooling devices) and electricity presented as percentage of population with access to potable water, ability to store food safely etc.

that represent the advantages of food system in Serbia are also important in Hungary, but with higher scores, and in addition to them, indicator dietary diversity also has a high score (86.2). It is similar with Romania, whose food system, in addition to the listed "strengths" has other two indicators with a high score: micronutrient availability and sufficiency of supply. Among neighbouring countries, Greece has the largest number of indicators with a score over 75, which represent "strengths" and contribute to the improvement of food security (as many as 14). In addition to the above indicators of strengthening food security in this country, they also include dietary diversity, nutrition standards, volatility of agricultural production, micronutritient availability, political stability risk and protein quality.

The second group of indicators consists of those with score ranging from 25 to 75, which have medium impact on food security. Most of these indicators, whose impact on food security is characterized as medium, are the same for Serbia and the neighbouring countries.

Indicators with a medium impact on food security in Serbia can be significantly improved, and they include those related to food quality and safety: dietary diversity, micronutrient availability, protein quality and introduction of nutritional standards (aimed at improving quality and food safety of the population).The absence of recommendations and national nutrition guides, as well as plans and diet strategies (as special sub-indicators of improving food quality and safety) is evident. Opportunities for improvement are also linked to indicators that increase food availability, such as: average food supply in kcal per capita (still relatively low); improvement of agricultural infrastructure (improvement of appropriate warehouses, road, railway infrastructure, water and air transport infrastructure, irrigation infrastructure, etc), which can contribute to the improvement and elimination of oscillations and instability of agricultural production and increase food availability. Volatility of agricultural production[7] can be caused by many factors, but it is most often the result of unpredictable events, such as unfavourable climate conditions, diseases, pests or price reduction. Stable agricultural production allows countries to better forecast food availability. This group of indicators also includes an indicator that measures political stability risk, which can reduce the availability of food, due to blockades of transport or reduction of food aid, etc.

The indicator that measures the presence of corruption in the country by assessing the risk of corruption has a score of 25 for Serbia, and is on the verge of indicators with biggest challenges, or weaknesses that must be overcome in order to improve food system and food security. Corruption can reduce food affordability through inefficient use of natural resources, or inefficiency in food distribution. The fight against corruption and its eradication also plays an important role in attracting foreign investors and securing greater investment in the agricultural sector. Masset (2011) consider that constitutive elements that contribute to fighting hunger are political will, anti-hunger policies and programs. In order to tackle corruption there must be a certain level of political will.

7 In the past eight years, Bulgaria is the country where this indicator has improved the most. In the period 2005-2009, the country had an index of the most unstable agricultural productivity among all analyzed countries, but with the trend of stabilization in every year.

Three types of corruption: individual, business and political are observed in the agricultural sector of Serbia. Land registry officials are reported as the third most corrupt public officials, with nearly 6% of citizens who had interactions with them, resulting in a bribe being paid. Transition in Serbia provided the opportunity for various forms of abuse and illegal behaviour through the privatization of public ownership. Privatization of Serbian agribusiness was not transparent, with frequent changes of legislation. During this process, in the past decade, more than 50.000 workers lost their jobs, which directly caused the increase of the hungry and the poor. This leads to conclusion that the level of corruption in Serbia is very high. After the democratic changes in 2000 Corruption Perceptions Index was 1.3, and in the meantime, this index increased almost three times to 3.5, but the fight against corruption did not produce significant results (Papić Brankov & Milovanović, 2015).

Two the most significant weaknesses of the food system in Serbia in 2019, measured by GFSI, are public expenditures on agricultural research and development (with a score of only 2.6) and gross domestic product per capita (US$ PPP), with a score of 13.3 (Table 6).

Table 6. Overview of the GFSI indicators evaluated as "weaknesses" in Serbia and neighbouring countries in 2020

Indicator		Serbia	Bulgaria	Romania	Hungary	Greece	All countries average
2.2	Public expenditure on agricultural R&D	2.6	4.5	5.5	3.3	1.6	5.0
1.3	Gross domestic product per capita (US$ PPP)	13.3	17.1	22.1	24.3	23.4	17.8

*"Challenges" or "weaknesses" are defined as any indicator score below 25.0 (EIU database, GFSI 2019)

Source: Authors' processing and interpretation of data based on EIU database, GFSI 2019

Unlike indicators that are assessed as "strengths" and which contribute to strengthening the food systems of analyzed neighbouring countries, all the observed countries have the same indicators that represent their "weaknesses". They are public expenditure on agricultural research and development and gross domestic product per capita. The exception is Romania, for which indicator (3.2) Nutritional standards is marked with a score 0.0, suggesting complete absence of any food standards in this country.

Public expenditure on research and development is crucial for developing the technologies and innovations necessary to increase agricultural productivity and reduce environmental impact. The Agricultural Orientation Index (IAO)[8]estimates

8 The Agricultural Orientation Index (AIO) represents the agriculture share of government expenditure, divided by the agriculture share of GDP. AOI value greater than 1 means that the agricultural sector receives a higher share of government spending comparing to its contribution to the overall economy (EIU, 2019).

public investment in agriculture including "rural infrastructure, agricultural research and extension services, technology development, etc." in order to enhance agricultural productive capacity (EIU, 2019). All participants in a food system – producers, logistics companies, retailers and consumers – should use innovations to identify completely new ways of producing, distributing and consuming food that will improve food security.[9]

Achieved GDP per capita (expressed in purchasing power parity in US$) in Serbia is significantly lower than in the neighbouring countries. The level of GDP per capita in Bulgaria is 29% higher than the Serbian average, in Greece by 65%, in Romania by 70% and in Hungary by about 79% (Table 7). This indicator is one of the main reasons of Serbia's lagging behind in terms of the achieved level of food security (measured by GFSI) in relation to the analyzed neighbouring countries.

Table 7. GDP per capita (US$ PPP) in Serbia and neighbouring countries in 2019

	Serbia	Bulgaria	Romania	Hungary	Greece
GDP per capita	18,989.0	24,561.2	32,297.3	33,979.0	31,399.4
Index WB	100,0	129,3	170,1	178,9	165,3

Source: Authors' processing and interpretation of data based on World Bank database

Growth of economic activities, increase of employment and reduction of poor population, as well as significantly higher public expenditures for research and development are crucial for innovations necessary to increase productivity in agriculture and reduce harmful effects on the environment, improving the food system and food security in Serbia.

Conclusion

In order to measure level of food security, various indicators have been defined. The Global Food Security Index (GFSI) is an indicator that measures the level of food security of individual countries and allows comparison between them. The latest GFSI data for 2019 show that Serbia is the worst ranked among the chosen neighbouring countries and is placed on 59th place, while Greece is the best positioned (31st position out of 113 countries).

The comparative analysis of individual dimensions of food security (affordability, availability, food quality and safety, and natural resources and resistance to adverse climate and other influences) indicates that all neighbouring countries have achieved higher score for each of these dimensions of food security. This confirms the initial hypothesis that, in terms of food security, Serbia lags behind the selected neighbouring countries. Serbia is ranked the worst according to the second component of GFSI – Availability, which can be explained by the factors involved in its calculation, primarily small allocations for agricultural research and development and significant oscillations in agricultural production.

9 UN data show that spending on agriculture has decreased compared to the agriculture contribution to GDP since the early 2000s (EIU, 2019).

The analysis of individual indicators of GFSI, i.e. food security performed at the level of the Republic of Serbia and neighbouring countries shows that, most often, same indicators (with values above 75.0) contribute to the improvement of food system and food security of Serbia and all neighbouring countries.

Two indicators can be singled out as the most significant weaknesses of Serbian food system in 2019: public expenditure on agricultural research and development and gross domestic product per capita expressed in purchasing power parity. These indicators are also the worst indicators of food security in all analyzed neighbouring countries.

Faster economic development of the country, higher public expenditures on agricultural research and development and innovation necessary to increase agricultural productivity and reduce harmful effects on the environment can significantly improve the food system, quality and food safety in Serbia. Additionally, recommendations and national nutrition guides, as well as plans and food strategies can also contribute to the improvement of Serbian position comparing to neighbouring countries.

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Conflict of interests

The authors declare no conflict of interest.

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THE INFLUENCE OF DIET HABITS, ON WHAT, HOW, HOW MUCH AND FOR WHOM TO PRODUCE IN THE AGRICULTURAL SECTOR OF SERBIA?

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A B S T R A C T

The assumption that the questions of what, how, how much and for whom to produce are of paramount importance for all producers in the agricultural sector of Serbia, is the reason for researching the relationship between socio-demographic variables income of the respondent's household, the number of household members and the number of household members earning income) and eating habits, in order to collect information on what the population of Serbia consumes or wants to consume, and in what quantities.

Introduction

Agriculture, from the smallest to the largest spheres of human development, is a fundamental activity or the starting point of human existence. Written traces testify that the economy, in ancient times, around 6000 BC, was based on agriculture, livestock and trade, while some authors cite 13,000 years (Montgomery, 2008), and some point out that agriculture played a crucial role in transforming society and population growth (Kremer, 1993). Developmental problems of economics and agriculture, in the form of questions: what, how, how much and for whom to produce was long ago formulated by the famous Nobel laureate Paul Samuelson (Economics, 1969) In the time of the Greek city-states and the Athenian Empire, and later in the time of Rome, the main economic branch of both Greece and Rome was agriculture (Galbraith, 2017). The well-known British economist and priest Malthus (Thomas Robert Malthus) linked the growth and

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survival of the population, in his scientific analyzes, directly with agriculture through the production of livelihoods (Vujović, 2007). Numerous studies and scientific papers confirm the importance of nutrition for the health of the population (Niva, 2007; Grupa autora, 2013; Ronteltap, et al., 2012; Popescu et al., 2017), that numerous diseases occur due to diet (Nikolić, et al., 2009). Aristotle himself (384-322 BC) in his works analyzing the essential categories of economics and ethics, never questioned the fundamental position of agriculture (Bulliet et al., 2011; Burešova et al., 2020). Well-known theorists of economics Smith, Ricardo, Marx, Keynes, Leontief and others had a similar relationship, after Aristotle throughout history. However, there were those like Hume (David Hume 1711-1776) who, speaking of economic development and manufacturing, created doubts, claims such as "could not remember a single passage of any ancient author in which the growth of a city attributed to the establishment of manufacture" (Galbraith, 1995,7). Through the privatization process dictated by representatives of large international corporations — primarily the IMF, the WB, local experts, and national governments — the benefits of privatizing institutions and resources from across society have been transferred to private companies (Băncescu et al., 2019). Poverty is on the rise in Third World countries, especially in Latin America and Africa, where local elites have been more zealous in implementing "structural adjustment programs". Thus, e.g. Costa Rica after decades of disciplined implementation of structural adjustment programs, among other things, switched to food imports, increased the trade deficit by almost 100%, from 350 to 532 million dollars (Lappe, M.F. et al., 1998.8). "The actors - governments, schools, producers, retailers, the media and consumers - can encourage CE by the production, distribution, consumption and presentation of the benefits of domestic food products" (Rakić, et al., 2019, 350; Wambui et al., 2019). Worldwide, 800 million people suffer from hunger every day. Every year, 12 million children die from hunger and diseases related to it, of which 34,000 are younger than 5 years (Lappe, M.F. and others, 1998.8). According to the Food and Agriculture Organization of the United Nations (FAO), food production has been growing faster since 1950 than population growth in all areas except Africa. Africa has enormous untapped potential to produce food, while countries known as famine countries Somalia, Ethiopia, Sudan, for example have much more unused land than they cultivate (Heilig, 1996), implying the importance of knowledge factors (Vilke, Gedminaite-Raudone and Cvijanovic, 2019:143), while Hungary can be cited as an example of a country that has an internationally respected agricultural sector and processes a significant part of its products in its own food industry (Juhász, et al., 2016). Some theorists, analyzing the multiple problems from which most agricultural and nutrition statistics suffer, warn that countries that have only recently modernized without exception underestimate their agricultural production (Poleman, 1981), while some authors point to the importance of agricultural policy and institutional support (Cvijanović et al., 2011). It should be noted that external influences and effects of production processes are very important for the agricultural sector (Tirol, 2016).

Today, the concept of agrarian and rural development should have primarily broader economic-ecological-tourist motives, valorizing agro-ecological and rural potentials, in order to productive and socio-demographic revitalization of rural areas and more balanced demographic development (Milanović, et al., 2007,189; Greenwood, J., Williams, MA, Shaw, G. 1990; Cvijanović et al., 2019; Cvijanović et al., 2020). Some authors emphasize the direct impact of results achieved in agriculture on improving the quality of life in rural areas and the efficiency of the rural economy (Cvijanović et al., 2020: 19), while some point to the importance of clusters in agricultural and agricultural sector development (Porter, 2000). A direct impetus to the development of the agricultural sector in Serbia (Tošović-Stevanović, et al., 2020), through gastronomy, is provided by tourism, while e.g. ecotourism with all the positive aspects-insisting on preserving or not disturbing the natural environment, directly conditioned by a healthy environment and healthy food (Williams, A.M, 1988). Some world-famous researchers (Trišić, 2019) see the necessity of environmental protection as a common goal and direct connection of development aspects of tourism and agriculture, while the tourist market enables the agricultural sector to sell food products Cvijanović and others). In order to find an adequate answer to the questions: what, how, how much and for whom to produce, a field research was done on a very heterogeneous sample, given that all members of the population are consumers of food products. For all innovation capacities in agriculture, in addition to technological and management goods, information is needed (Pomareda, 2013), especially when it comes to the impact on the health of the population of certain food products (Sima & Gheorghe, 2017; Khandpur et al., 2020).

Sample and materials

A total of 220 respondents participated in the research, of which 144 respondents (65.5%) were male and 76 respondents (34.5%) were female. Observed by age groups, the respondents were divided into six groups: 1.8% of respondents were under the age of 20, 5.5% of respondents were in the age category between 20 and 30, then 32.7% of respondents were in the age category between 31 and 40 years of age, 41.8% of respondents were in the category between 41 and 50 years of age, then in the group of 51 to 65 years of age 10.9% of respondents, and 7.3% of respondents were over 65 years of age. When the respondents are observed according to their employment status, 70.9% of employees, 18.2% of the unemployed, 1.8% of students and 9.1% of pensioners were in the sample. Regarding the acquired education, in this sample there were 36.4% of respondents with completed high school, 50.9% of respondents with completed college or university, while 10.9% of respondents have completed a master's or doctorate. When it comes to the amount of personal monthly income, 6.2% of respondents stated that they do not earn personal income, 41.8% of respondents earn up to 500 euros, 27.3% earn between 501 and 1000 euros, 12.7% earn between 1001 and 1500 euros, 3.6% of respondents earn between 1501 and 2000 euros, and 3.6% of respondents earn over 2000 euros per month. In addition to personal income, respondents were asked about the monthly income of the household and are therefore divided into several groups, 25.5% of respondents live in a household with an income of up to 500 euros per

month, 29.1% of respondents state that they live in a household in which the income is from 501 to 1000 euros per month, in the category of income between 1001 and 1500 euros per month is 20% of respondents, in the category between 1501 and 2000 euros of income is 10.9% of respondents, in the category between 2001 and 3000 euros 3.6% of respondents have a monthly income, while 9.1% of respondents live in households with incomes higher than 3000 euros, while 1.8% of respondents stated that they are not familiar with this information. Observing the number of household members, it was shown that 12.7% of respondents live independently, 36.4% of respondents live in a two-member household, 21.8% live in a three-member household, 21.8% in a four-member household, 1.8% live in a five-member household, while 5.5% of respondents live in a household with over five members. Regarding the division of respondents according to how many members of their households earn income, it is shown that in 36.4% of respondents only one member earns income, in 54.5% of respondents two members earn income, in 7.3% of respondents three household members earn income, while in households where four members earn income, 1.8% of respondents live.

Subject, goal and research methodology

The subject of the research was to examine the relationship between socio-demographic variables (gender, age, level of education, employment status, monthly personal income of the respondent and monthly personal income of the respondent household, number of household members and number of household members earning income) and eating habits in order to collect relevant information in response to questions: what, how, how much and for whom to produce in the Serbian agricultural sector. This research was of quantitative type and was conducted through a questionnaire in which the first part of the question referred to socio-demographic data about the respondent, while in the second part a group of dependent variables was processed through the Likert rating scale, to what extent they agree with the claims by which we examined their eating habits. For data analysis, we used: descriptive analysis (frequencies, percentages, arithmetic mean), t-test, multiple linear regression, and Pearson correlation coefficient. The level of statistical significance was set at $p < 0.05$, and all obtained data were processed in the SPSS program, version 19. The independent variables in this study were gender, age, level of education of the respondents, work status of the respondents, monthly personal income of the respondents, monthly income of the household, number of members living in the household and number of household members earning income. Dependent variables examined the eating habits of the respondents, who assessed on a five-point Likert type scale the extent to which they agreed with the statements examined, where 1 meant I did not completely agree, and 5 meant I completely agreed.

The results show that 80% of respondents regularly consume fresh fruits and vegetables, while 90.9% of them state that they can buy fresh fruits and vegetables in the immediate vicinity. The largest number of respondents (61.9%) state that they do not consume fast food often, while almost every other respondent (54.6%) points out that they do not consume snacks and sweets often. A sufficient amount of water is

taken in by 65.4% of the respondents every day, while every other respondent (50.9%) states that he does not drink milk often. Non-carbonated juices are not often drunk by 47.3% of respondents, while the number is higher when it comes to carbonated juices, which 63.6% of respondents state that they do not drink often. Low-alcohol beverages are not often drunk by 56.4% of respondents, while 81.8% rarely or strongly do not drink strong alcoholic beverages. Slightly less than half of the respondents (47.3%) state that they are physically active, while 41.9% of the respondents state that they do not do sports. When it comes to whether GMO food is harmful, the largest number of respondents (81.8%) believe that it is. That's right, 45.4% of respondents state that the most important thing when choosing food is that it is delicious, that 12.7% of respondents state that the most important thing for them is that it is low in calories, while for 45.5% it does not matter that the food is low in calories. When choosing food, 80% state that the most important thing for them is that it is healthy.

Table 1. Respondents' answers to what extent agree with the defined statements

	1	2	3	4	5	NA
1. I regularly consume fresh fruits and vegetables	1.8%	1.8%	16.4%	50.9%	29.1%	/
2. I can buy fresh fruits and vegetables in my immediate vicinity, that is. it is available to me	1.8%	1.8%	5.5%	54.5%	36.4%	/
3. I often consume fast food	16.4%	45.5%	23.6%	12.7%	1.8%	/
4. I often consume snacks and sweets	16.4%	38.2%	32.7%	10.9%	1.8%	/
5. I take in enough water daily	3.6%	3.6%	25.5%	30.9%	34.5%	1.8%
6. I often drink milk	23.6%	27.3%	14.5%	29.1%	5.5%	/
7. I often drink non-carbonated juices	25.5%	21.8%	27.3%	21.8%	1.8%	1.8%
8. I often drink fizzy juices	34.5%	29.1%	20.0%	10.9%	5.5%	/
9. I often drink weaker alcoholic beverages	27.3%	29.1%	18.2%	20.0%	3.6%	1.8%
10. I often drink strong alcoholic beverages	54.5%	27.3%	10.9%	5.5%	1.8%	/
11. I am physically active	12.7%	7.3%	27.3%	30.9%	16.4%	5.5%
12. I do sports	25.5%	16.4%	29.1%	16.4%	12.7%	/
13. I find GMO food harmful	3.6%	3.6%	10.9%	18.2%	63.6%	/
14. When choosing food, the most important thing for me is that it is delicious	3.6%	18.2%	32.7%	30.9%	14.5%	/
15. When choosing food, the most important thing for me is that it is low in calories	16.4%	29.1%	41.8%	10.9%	1.8%	/
16. When choosing food, the most important thing for me is that it is healthy	.0%	3.6%	16.4%	50.9%	29.1%	/

*1-I do not completely agree; 2-I disagree; 3-Not sure; 4-I agree; 5-I agree completely; NA- no answer.

Source: author's research.

T test

The T test examined whether respondents differed in their responses to dependent variables in which eating habits were assessed depending on the gender to which they belonged. The T-test shows that the respondents differ in terms of regular consumption of fresh fruits and vegetables, $t(218)= - 4.26$, $p<0.01$. It is shown that they are more regular in consuming fresh fruits and vegetables (M=4.32) than men (M=3.89). Thus, it is shown that the respondents differ in the frequency of drinking carbonated juices, $t(218)=2.285$, $p<0.05$ and it is shown that men (M=2.36) drink carbonated juices more often than women (M=2.00). Then, it is shown that the respondents differ according to the frequency of drinking strong alcoholic beverages $t(218)=2,551$, $p<0,05$. It is shown that men (M=1.83) drink strong alcoholic beverages more often than women (M=1.53). Regarding the choice of food in terms of choosing food to be low in calories, in this case there are differences between respondents $t(218)=2,418$, $p<0,05$, so men (M=2,64) to a greater extent than women M=2.32) state that the most important thing when choosing food is that it is low in calories. Finally, it is shown that the respondents differ in that the most important thing when choosing food is that the food is healthy $t(218)=2.244$, $p<0.05$. It is shown that men (M=4.14) to a greater extent than women (M=3.89) state that the most important thing when choosing food is that it is healthy. No statistically significant differences between the sexes were obtained for the assessment of other dependent variables.

Multiple regression

Multiple regression examined whether a combination of predictors, which included gender, age, employment status, level of education, monthly personal income, monthly household income, number of household members, and number of household members earning income, could predict habits, in the diet of the subjects. When it comes to regular consumption of fresh fruits and vegetables, they show that this combination of predictors can predict regular consumption of the mentioned $R^2= .200$, $F(8,211)=6,595$, $p<.01$, and as individual significant predictors the sex of the respondents $b = .369$, $t=3.213$, $p<.01$ and monthly personal income $b = .143$, $t=2.242$, $p<.05$, which means that women with higher earnings consume fruits and vegetables more regularly than other categories of respondents. The results show that the availability of fresh fruits and vegetables can be statistically significantly predicted by this combination of predictors $R^2 = .134$, $F (8,211)= 4,076$, $p<.01$, and the age of the respondents $b = -.132$ stands out as individual significant predictors, $t= -2.368$, $p<.05$, employment status $b = .157$, $t=2.187$, $p<.05$, monthly household income $b =.180$, $t=3.599$, $p<.01$ and number of household members $b = -.154$, $t = -3.070$, $p<.01$. Based on the results, it can be concluded that fresh fruits and vegetables are more accessible to younger unemployed respondents with a higher household income, but numerically smaller household, and they can buy it in the immediate vicinity. A statistically significant prediction was obtained for the frequency of respondents in consuming fast food $R^2= .163$, $F(8,211)=5.126$, $p<.01$, and as individual significant predictors are the working status $b = - .326$, $t = -3.735$,

p<.01 and monthly household income b = -.174, t= -2.871, p<.01, which means that employed respondents with lower monthly household income consume fast food more often than other groups of respondents. The frequency of consumption of snacks and sweets can also be statistically significantly predicted by this combination of predictors R^2= .214, F(8,211)= 7.190, p<.01, and as individual significant predictors the gender b= .329, t =2.531, p <.05, age of respondents b = -.159, t= -2.462, p<.05, employment status b = .308, t = 3.692, p<.01 and monthly household income b = -.157, t= -2.718, p<.01. Based on the results, it can be concluded that younger unemployed women with lower monthly household income consume snacks and sweets more often than other categories of respondents.

This combination of predictors proved to be statistically significant when the intake of sufficient water in the body at the daily level R^2= .112, F(8,207)=3,271, p<.01, and as individual significant predictors are the age of the respondents b = -.186, t= -2.451, p<.05 and working status b= .309, t= 3.154, p<.01, which means that younger unemployed respondents consume a sufficient amount of water in the body more than other categories of respondents. When it comes to the frequency of drinking carbonated juices, the results show that this combination of predictors can predict the mentioned frequency R^2= .074, F(8,211)= 2.113, p<.05, and the working status b= - stands out as an individual significant predictor. 299, t = -2.637, p <.01, which means that employed respondents drink carbonated juices more often than other groups of respondents. A statistically significant prediction was also obtained with the frequency of drinking weaker alcoholic beverages R^2= .197, F(8,207)=6,355, p<.01, and monthly personal income b = -.206, t = -2,212 stand out as individual significant predictors, p<.05 and the number of household members earning income b = -.319, t= -2.078, p<.05. Based on the results, it can be concluded that lower alcoholic beverages are more often drunk by respondents with lower personal incomes who live in households where a smaller number of members earn income. The results show that the frequency of drinking strong alcoholic beverages can also be statistically significantly predicted by this combination of predictors R^2= .263, F(8,211)=9.406, p<.01, and as individual significant predictors the pole b = -.445, t= -3.423, p<.01, age of respondents b= .245, t=3.786, p<.01, degree education = .548, t= 5.727, p<.01, monthly personal income b= -.150, t= -2.072, p<.05 and the number of household members earning income b= .284, t=2.371, p<.05. The obtained results show that older, more educated men with lower personal incomes, who live in households in which a larger number of members earn income more often than other groups of respondents, drink stronger alcoholic beverages. The physical activity of the respondents can also be statistically significantly predicted by this combination of predictors R^2= .199, F(8,199)=6.185, p<.01, and the age of the respondents b= -.220, t= -2.521 are singled out as individual significant predictors, p<.05 and monthly household income b= .265, t= 3.385, p<.01, which means that younger respondents with higher household income are more physically active compared to other categories of respondents. This combination of predictors proved to be statistically significant when playing sports R^2= .277, F(8,211)= 10,125, p<.01, and as individual significant

predictors the pole b= -.367, t = -2.090, p < .05, age of respondents b= -.204, t= -2.336, p<.05, monthly household income b = .363, t=4.641, p<.01 and number of household members b= .185, t = 2,345, p<.05. Based on the results, it can be concluded that younger men with higher monthly household incomes and a larger number of household members are more likely to play sports than is the case with other groups of respondents.

A statistically significant prediction was obtained in the opinion on the harmfulness of GMO food R^2= .142, F(8,211)=4,347, p<.01, and the age of the respondents b= .195, t= 2,612, p<.05 and the number of household members b= .215, t= 3.188, p<.01, which means that older respondents who live in a larger household more than other groups of respondents believe that GMO food is harmful. It is shown that the importance of food taste can be statistically significantly predicted during its selection. R^2= .090, F(8,211)= 2,594, p<.05, and the degree of education b= -.238, t stands out as individual significant predictors = -2.097, p<.05 and monthly personal income b= .192, t=2.223, p<.05, which means that it is more important for respondents with lower education and higher personal income when choosing food that it is tasty than other categories of respondents. When it comes to the choice of food, the importance that it is low in calories, it is shown that this combination of predictors can predict its importance R^2= .228, F(8,211)=7.812, p<.01, and as individual significant predictors the gender b stands out = -.414, t = -3.208, p <.01, age of respondents b= .227, t = 3.544, p<.01, working status b = -.456, t = -5.507, p<.01, level of education b= .365, t=3.851, p<.01 and monthly household income b= -116, t= -2.023, p<.05. Based on the results, it can be concluded that when choosing food for younger highly educated employed men with lower household income, it is more important than other categories of respondents that it is low in calories.

This combination of predictors proved to be statistically significant in the importance that respondents give to healthy food when choosing food R^2= .314, F(8,211)=12.076, p<.01, and as individual significant predictors, the gender b = -.250, t = -2.531, p<.05, employment status b = -.205, t= -3.228, p<.01, degree education b = -.233, t= -3.210, p<.01, monthly personal income b = -.304, t= -5.521, p<.01, monthly household income b = .274, t= 6.222, p<.01 and number of household members b = .096, t=2.158 , p<.05. The obtained results show that when choosing food for lower educated employed men with lower personal income and higher household income, who live in a larger household, more than for other groups of respondents, the most important is that the food is healthy. Based on the obtained results, it is concluded that this linear combination of predictors proves to be important for predicting certain dependent variables by which we examined the habits of the subjects in nutrition.

Correlation

Using the Pearson linear correlation coefficient, the interrelationship between the dependent variables by which we examined the subjects eating habits was examined. The obtained results of the correlation matrix are listed in Table 2 and show that the highest degree of dependence was found between regular consumption of fresh fruits and

vegetables and intake of sufficient water in the body on a daily basis (r = + 0.652, p<.01), which means that respondents who regularly consume fresh fruits and vegetables every day also take in a sufficient amount of water in the body and vice versa. The results show that a moderate degree of dependence was also found between the following variables: physical activity and sports (r = + 0.642, p<.01), which means that with the growth of sports, physical activity increases and vice versa. Then, a moderate correlation was found between the frequency of drinking milk and the frequency of drinking non-carbonated juices (r = + 0.586, p<.01), which means that with the increase of drinking milk, the frequency of drinking non-carbonated juices increases and vice versa. A moderate correlation was also found between regular consumption of fresh fruits and vegetables and its availability, it the ability of respondents to buy the same in the immediate vicinity (r = + 0.550, p<.01), which indicates that with the increase in the availability of fresh fruits and vegetables, its regular consumption increases and vice versa.

Table 2. Correlation matrix results

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	.550**	-.222**	-.066	.652**	.046	.009	-.119	-.045	.101	.362**	.254**	-.056	-.265**	.160*	.139*
2		1	.059	.142*	.411**	.095	.068	.023	-.061	-.041	.322**	.071	-.092	-.092	.041	.131
3			1	.415**	-.155*	.302**	.367**	.334**	.173*	-.082	-.130	-.165*	-.365**	.140*	.018	-.395**
4				1	-.037	.322**	.346**	.327**	.072	.030	-.352**	-.228**	-.024	.379**	-.033	-.206**
5					1	.072	-.080	-.204**	-.055	.031	.422**	.286**	-.055	-.259**	-.062	.189**
6						1	.586**	.283**	.163*	-.047	.199**	.109	-.033	.008	-.060	-.148*
7							1	.406**	.132	.110	-.018	.124	-.020	.010	-.076	-.135*
8								1	.040	.086	-.198**	-.042	-.065	.182**	-.142*	-.113
9									1	.315**	-.169*	-.261**	-.010	-.097	.066	-.078
10										1	-.191**	-.053	.180**	-.156*	.076	-.028
11											1	.642**	-.089	-.430**	-.008	.444**
12												1	-.197**	-.339**	.063	.400**
13													1	-.208**	.219**	.224**
14														1	-.019	-.248**
15															1	.085
16																1

**p<.01; *p<.05

Source: Author's calculation

Conclusion

All results obtained by T-test, multiple linear regression and Pearson's correlation coefficient, processing of information and data obtained on the basis of questionnaires related to research of eating habits of the population, on a random sample, can seriously serve all stakeholders of Serbian agricultural sector to answer questions: what, how, how much and for whom to produce.

Conflict of interests

The authors declare no conflict of interest.

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EXAMINATION OF THE INFLUENCE OF IMPACT ON TOBACCO CONSUMPTION IN SERBIA

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ABSTRACT

The subject of this paper is the econometric analysis of tobacco demand in Serbia. The aim of this paper is to quantify the impact of income and socio-economic and demographic characteristics of households on tobacco expenditure based on microdata from the 2019 Household Budget Survey conducted by the Statistical Office of the Republic of Serbia according to the same methodology applied by the European Union Agency for Statistics. The influence of these factors was quantified on the basis of seven different functional forms of Engel curves, which are most often used in econometric empirical research. Based on the estimated parameters of the empirical specifications of Engel curves and the elasticity derived from them, the hypothesis of inelasticity of demand for tobacco products in relation to household income was tested.

Introduction

One of the most stable connections in the field of economics was established by Ernst Engel back in 1857. Analyzing the structure of expenditures of a relatively small set of households, he found that there is a high degree of correlation between the share of expenditures for certain products and services and the level of household income and that this dependence determines the type (rank) of needs. He found that the share of expenditures in low-income households for products that meet the necessary needs, such as food products, is relatively high, while such share is relatively small in households with high income. The share of expenditures for relatively necessary or relatively luxurious products is approximately the same for households with lower and higher income (Milojević et al., 2020). Adopting the logical assumption that as household incomes increase, they actually adopt a pattern of behaviour characteristic

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for higher-income households, Engel drew certain conclusions, which he explained in more detail in a paper published in 1895, which is considered a pioneering work in the field of family budget analysis.

The basic conclusions that Engel drew regarding the movement of the share of expenditures for necessary, relatively necessary and luxurious products, are called Engel's laws in his honor (Wold and Jureen (1953)). Summarized in one sentence, Engel's laws reveal that with the increase of household income: 1) the share (proportion) of expenditures for necessary goods in total expenditures decreases, 2) the share of expenditures for relatively necessary goods remains unchanged, 3) the share of expenditures for luxury goods in household income are growing. Engel's laws can be expressed in terms of elasticity of expenditures in relation to income as follows: expenditures for necessary goods are inelastic (coefficients of elasticity is less than one), expenditures for relatively necessary goods are normally elastic (coefficients of elasticity is equal to one), expenditures for luxury goods are inelastic (the coefficient of elasticity is greater than one.

The basic hypothesis from which this research started is that tobacco in Serbia has the status of a necessary good, i.e. that the elasticity of tobacco expenditure in relation to household income is less than one, i.e. that the demand for tobacco and tobacco products is inelastic in relation to household income. In addition to this basic hypothesis on the impact of income on expenditures, i.e. the share of tobacco expenditures, the paper examines the impact of socioeconomic and demographic characteristics of households on the patterns of behavior of households in terms of consumption of tobacco and tobacco products.

Researchers from different countries of the world have studied the dependence of tobacco expenditure on income and socioeconomic and demographic characteristics of the household. A large number of papers and research studies in this field have been published, especially in the last two decades. Arunatilake and Opatha (2000), who surveyed the impact of income on tobacco demand in 1999/2000 on a sample of 7,500 Sri Lankan households, found that the impact of income on income consumption is significant and that with the increase in income, the share of tobacco expenditure in household income decreases. Using data from the National Survey of Household Income and Spending and the Federal Office of Consumer Protection for 1992, 1994, 1996 and 1998, Sesma-Vázquez et al. (2002) analyzed the demand for tobacco in Mexico depending on the income of households, but also on the price of tobacco products and the regional affiliation of the household. They found that Mexican households spent on average about 4% of total disposable income on tobacco in the analyzed period and confirmed the assumption that households at lower income levels have a higher share of tobacco expenditure in total expenditure, compared to affluent households with a lower share of expenditures for this group of products. Manrique and Jensen (2004) examined the impact of income and a number of socio-economic and demographic characteristics of households (such as size of the household, average age, head of the household age and the number of household members who make earnings). The research was based on data from the surveys of

consumption of 21,155 Spanish households conducted from April 1990 to May 1991 and was intended to explore the demand for tobacco. As control variables, they included the following in the model: level of education, ownership of the building in which the household resides, employment status, regional affiliation, type of settlement in which they live (urban or rural) and gender of the household head. The results of the empirical econometric analysis showed that male-headed households living in urban areas as well as households with a larger number of employed members consume more tobacco. In addition, they concluded that households whose owner is the owner of the building in which the household lives consume tobacco to a lesser extent; and that the demand for tobacco in Spain is inelastic (estimated value of income elasticity is 0.44). In 2005, Al-Sadat and associates analyzed the income elasticity of tobacco expenditures by analyzing the budget of Malaysian households and concluded that the demand for tobacco and tobacco products in the period from 1990 to 2004 was approximately normally elastic, i.e. that the income ratio elasticity is approximately equal to one, and that tobacco belongs to the group of relatively necessary or relatively luxurious goods. A few years later Yusof and Duasa (2010) analyzed the budgets of 2649 Malaysian households and concluded that gender of the household head, as a demographic variable, in addition to income, affects tobacco consumption in Malaysia significantly. Nguyen, Rosenqvist, and Pekurinen (2012) conducted an international cross-section analysis on household samples originating from 11 European countries that comprise data collected from household consumption surveys conducted between 1960 and 2009. The results of their study showed that the status of tobacco in terms of income elasticity and the nature of needs is different in different countries. In Finland, France, Germany, Ireland, Spain, Sweden and the United Kingdom, the demand for tobacco is inelastic (income elasticities are less than one), in Portugal the demand for this type of product is normally elastic, while in others countries - Austria, Italy and the Netherlands, tobacco has acquired the status of an inferior product with negative values of income elasticity. On a relatively large sample of 13,866 households in Jordan, Al-Habashneh and Al-Majali (2014) examined, among other things, the impact of household size on tobacco consumption and found that this variable did not significantly affect the dependence of Jordanian household expenditure on the level of disposable income. Çetinkaya, Erkam and Basaram (2014) assessed the impact of income, level of education, household size and age structure of the household on the demand for cigarettes. They used the log-log functional form of the Engel curve, which they found to best represent the dependence of tobacco consumption on household income, based on data from household consumption surveys conducted by the Statistical Institute of Turkey collected in period from 2003 to 2011. These researchers found that the value of income elasticity in the observed period varied from 0.13 to 0.40, that the influence of the level of education of the household head was significant in all years of the analyzed period, and that the variable Age structure of the household had a significant impact only in three years.

In our region, Tričković (1971) was the first author who, as part of a comprehensive analysis of family budgets based on the annual survey of the Federal Bureau of

Statistics on the consumption of 13,117 Yugoslav households conducted in 1963, with data on annual expenditures for 16 groups of products and services, with distributions for three basic socio-economic groups of households - agricultural, mixed and labour, quantified the impact of income on tobacco expenditures and estimated that income elasticities for the three mentioned socio-economic groups of households are 0.50, 0.63 and 0.60 respectively. Ten years later, based on the annual survey on the consumption of 5,770 Yugoslav working-class households which was conducted in 1978, Hanić (1982) estimated that the elasticity of tobacco expenditure in relation to household income was 0.73, which confirmed the earlier finding of inelastic demand for tobacco and tobacco products in relation to the income of Yugoslav households in the period from 1963 to 1978.

Until recently, the analysis of tobacco consumption based on the survey on family budgets was not the subject of more detailed research in our area. A special impetus to the study of the impact of income, prices, socio-economic and demographic characteristics of households on tobacco expenditures was given by the authors as follows: Mugoša et al. (2017) in Montenegro, Prekazi (2017) in Kosovo, Gjika et al. (2020) in Albania, Aligorić et al. (2020) in Bosnia and Herzegovina, Jovanović et al. (2018), Hanić and Bugarčić (2019), Bugarčić (2019), Vladisavljević and others. (2020) in Serbia.

Materials and methods

The research was conducted by modeling tobacco consumption using seven functional forms of Engel curves that were most often applied in empirical econometric analysis of data obtained on the basis of household consumption surveys. These functional forms together with the income elasticities they imply are shown in *Table 1*.

Table 1. Analytical forms of functional dependence of expenditures on household income used in empirical analysis

Model	Analythical expression	Elasticity
Linear model	$Y = \alpha + \beta X$	$E = \frac{\beta}{Y}$
Quadratic model	$Y = \alpha + \beta log\ X + \gamma\ X^2$	$E = \frac{X}{Y}(\beta - 2\gamma X)$
Double-logarithmic model	$Y\ = \alpha + \beta\ log\ log\ \ X$	$E = \beta$
Linear-logarithmic model	$Y = \alpha + \beta\ log\ log\ \ X$	$E = \frac{\beta}{Y}$
Logarithmic-linear model	$log\ log\ \ Y\ = \alpha + \beta\ X$	$E = \beta X$
Inverse model	$Y = \alpha + \frac{\beta}{X}$	$E = \frac{\beta}{\alpha X - \beta}$
Logarithmic-inverse model	$log\ log\ \ Y\ = \alpha - \frac{\beta}{X}$	$E = \frac{\beta}{X}$

The parameters of these functional forms were estimated by the method of least squares based on micro data collected by the Statistical Office of the Republic of Serbia using the Household Budget Survey in Serbia in 2019, with the application of Stata statistical software for data processing.

Two criteria were used to measure the degree of adjustment of a concrete model specification to empirical data, the coefficient of determination and the Akaike Information Criterion (AIC).

As the formulas in the last column of *Table 1* show, income elasticity is a variable and depends on the level of household income, with the exception of the double-logarithmic specification of the consumption model where the elasticity is constant for each income level. In order to approximate the (variable) expenditure elasticity implied by a specific Engel curve specification by a single number, the expenditure elasticity for a given income interval was calculated at the center of the estimated regression equation (X_s, Y_s), where X_s is the mean calculated as an arithmetic, geometric or harmonic mean of household income variable depending on whether the values of this explanatory variable are expressed on an arithmetic or logarithmic scale or on the scale of its reciprocal values.

The survey was conducted on the basis of micro data conducted by the Statistical Office of the Republic of Serbia through the Household Budget Survey 2019 according to the methodology harmonized with the methodology of the EU Statistics Agency, the International Labor Organization and the United Nations, which enables comparability of results with the results obtained by the researchers from other countries where Consumption Surveys are conducted according to the same methodology.

Table 2. Sample structure according to socio-economic characteristics

Socio-economic and demographic characteristics		**Number of households**	**Share**
Gender of the head of household	Male	4162	0.66
	Female	2192	0.34
	Total	6354	1.00
Level of education of the head of household	No education	159	0.03
	Elementary	1931	0.30
	Secondary	3112	0.49
	Tertiary	1152	0.18
	Total	6354	1.00
Regional affiliation of the household	Beograd	1245	0.20
	Vojvodina	1780	0.28
	Šumadija and Western Serbia	1787	0.28
	Southern and Eastern Serbia	1542	0.24
	Total	6354	1.00
Household type	Urban	3890	0.61
	Rural	2464	0.39
	Total	6354	1.00

Socio-economic and demographic characteristics		Number of households	Share
Size of household	1	1709	0.27
	2-4	3831	0.60
	5-7	762	0.12
	>7	52	0.01
Total		6354	1.00

Source: Authors' calculation

The survey entailed 6354 households. Of the total number of households covered by the survey, i.e. the sample 66% are households whose heads are male; almost half (49%) are households where the head of the household has secondary education; approximately one quarter are households from each of the four regions of Serbia; urban households account for 61%; medium-sized households (two to four members) make up 60%.

Results and Discussion

In 2019, every third household in Serbia had expenditure on tobacco, which means that in every third household at least one person consumed tobacco, while in 2006 every second household had expenditure on tobacco. The average monthly expenditure on tobacco of Serbian households in 2019 amounted to 6893 dinars, with the share of expenditure for tobacco in the total household income amounting to 8%, while in 2006 the share was only 5%.

Based on the data on household consumption in 2019, it has been determined that the share of expenditures for tobacco of smoking households in Serbia decreases with the increase of income. Arunatilake and Opatha (2000) in Sri Lanka and Sesma-Vázquez et al. (2002) in Mexico.

In terms of the gender structure of the household heads in the household in which at least one member consumes tobacco products, male households dominate(73%). The share of tobacco expenditures of these categories of households is approximately the same, amounting to 8%. Both sets of households are dominated by households whose head has completed secondary education. The largest number of households from the first group (35% of them) live in the territory of Šumadija and Western Serbia, while the largest number of households from the second group (30% of them) live in Belgrade. In terms of the type of settlement in which they live, both categories of households are mainly located in the city (56% and 68%, respectively).

Table 3 shows the estimated values of the parameters of the used functional forms of Engel curves together with the indicators of the level of significance and the degree of representativeness of individual functional forms.

Table 3. Estimated functional forms of Engel curves for the whole sample of households and for the subsample of households that are consumers of tobacco products

Model	Year	All households	Tobacco products consuming households
Linear	*Equation*	$Y_i = 307.862 + 0.032\ X_i$	$Y_i = 3909.605 + 0.037\ X_i$
	$p - value$	0.000	0.000
	F	865.326	398.437
	$Prob > F$	0.0000	0.0000
	R^2	0.120	0.152
	AIC	124120.633	43927.450
Log-log	*Equation*	$log\ Y_i = 2.346 + 0.555\ log\ X_i$	$log\ Y_i = 2.346 + 0.555\ log\ X_i$
	$p - value$	0.000	0.000
	F	381.449	381.449
	$Prob > F$	0.0000	0.0000
	R^2	0.146	0.146
	AIC	5529.123	5529.123
Log-lin	*Equation*	$log\ Y_i = 8.099 + 0.000X_i$	$log\ Y_i = 8.099 + 0.000X_i$
	$p - value$	0.000	0.000
	F	238.569	238.569
	$Prob > F$	0.0000	0.0000
	R^2	0.097	0.097
	AIC	5654.627	5654.627
Lin-log	*Equation*	$Y_i = -22403.407 + 2283.016\ log\ X_i$	$Y_i = -30941.491 + 3403.832\ log\ X_i$
	$p - value$	0.000	0.000
	F	865.718	450.111
	$Prob > F$	0.0000	0.0000
	R^2	0.120	0.168
	AIC	124120.288	43884.033

Model	Year	All households	Tobacco products consuming households
Quadratic	*Equation*	$Y_i = 111.148 + 0.037\,X_i - 0.000X_i^2$	$Y_i = 3464.937 + 0.046X_i - 0.000X_i^2$
	$p-value$	0.000	0.000
	F	436.932	203.955
	$Prob > F$	0.0000	0.0000
	R^2	0.121	0.155
	AIC	124115.000	43921.271
Reciprocal	*Equation*	$Y_i = 4219.964 - \frac{7.559e+07}{X_i}$	$Y_i = 9488.281 - \frac{1.424e+08}{X_i}$
	$p-value$	0.000	0.000
	F	584.461	336.979
	$Prob > F$	0.0000	0.0000
	R^2	0.084	0.131
	AIC	124372.841	43980.218
Log-reciprocal	*Equation*	$log\ Y_i = 9.003 + \frac{26703.341}{X_i}$	$log\ Y_i = 9.003 + \frac{26703.341}{X_i}$
	$p-value$	0.000	0.000
	F	396.796	396.796
	$Prob > F$	0.0000	0.0000
	R^2	0.151	0.151
	AIC	5516.055	5516.055

Source: Authors' calculation

Table 4 shows the estimated values of income elasticities for households that consume tobacco and for the sample of households that includes households that do not consume tobacco. The estimated values of income elasticities are presented separately for each functional form of the model of dependence of tobacco expenditure on household income, where in all cases, except in the case of the log-log Engel model, appropriate approximations of elasticity variable were made by using their means - arithmetic, geometric and harmonic mean instead of x i y , depending on the form of the functional dependence of y on x.

Based on the numerical values of income elasticities estimated for individual functional forms for the entire sample and subsample of smoking households, it can be reliably concluded that tobacco in Serbia has the status of a necessary good with an elasticity less than one. The research conducted by Bugarčić (2019) on household samples in Serbia from 2006 to 2018 obtained the same result, which roughly corresponds to the results previously obtained by Tričković (1971) and Hanić (1982) who examined the income elasticity of household expenditures in the former Yugoslavia. Similar results were obtained by Manrique and Jensen (2004) in Spain, Nguyen, Rosenqvist and Pekurinen (2012) in Finland, France, Germany, Ireland, Spain, Sweden and the United Kingdom, Çetinkaya, Erkam and Basaram (2014) in Turkey.

Table 4. Income elasticities of household tobacco expenditure in Serbia, estimated on the basis of seven functional forms

Model	Means	All households	Tobacco consuming households
Linear	Arith.	0.87	0.43
	Arith.	0.87	0.43
Log-log	-	0.56	0.56
	-	0.56	0.56
Log-lin	Arith.	0.00	0.00
	Geom.	0.00	0.00
Lin-log	Arith.	0.95	0.49
	Geom.	0.46	0.68
Quadratic	Arith.	0.94	0.54
	Arith.	0.94	0.54
Reciprocal	Arith.	0.48	0.25
	Harm.	0.75	0.38
Log-reciprocal	Arith.	0.40	0.33
	Harm.	0.64	0.49

Source: Authors' calculation

According to the methodology of the Household Budget Survey conducted by the Statistical Office of the Republic of Serbia, which is harmonized with the methodology of the European Agency for Statistics, tobacco expenditures are classified into three subgroups: 1) Cigarettes, all types 2) Cigars and cigarillos and 3) Tobacco, cigarette paper and filters. Based on sample observations, it was determined that of the total number of households in which at least one member consumes tobacco products, 88% buy products from the first subgroup (Cigarettes - all types), almost 12% of them consume tobacco products from the third subgroup (Tobacco, cigarette paper and filters), so that the number of households that have expenditures for the second subgroup, which includes Cigars and cigarillos, is negligibly small.

While the share of expenditures for the group tobacco in household income is 8%, the share of expenditures of tobacco consuming households for the subgroup Cigarettes - all types is 9%, and for the subgroup Tobacco, cigarette and filter paper is 3%. In

accordance with the expectations of households with a lower level of income (52873 dinars) buy cheaper products from the subgroup Tobacco, cigarette paper and filters, unlike affluent households (whose average income is 84989 dinars) who buy products from the first subgroup (Cigarettes - all types).

Table 5. Income elasticities of expenditures for two subgroups of tobacco, for smoking and non-smoking households, in Serbia

Model	Means	Cigarettes (all types)		Tobacco, paper and filters	
		All households	Tobacco consuming households	All households	Tobacco consuming households
Linear	Arith.	0.91	0.38	0.00	0.21
	Arith.	0.91	0.38	0.00	0.21
Log-log	/	0.43	0.43	0.22	0.22
	/	0.43	0.43	0.22	0.22
Log-lin	Arith.	0.00	0.00	0.00	0.00
	Geom.	0.00	0.00	0.00	0.00
Lin-log	Arith.	0.00	0.43	0.00	0.26
	Geom.	0.00	0.57	0.00	0.34
Quadratic	Arith.	0.97	0.44	-2.32	0.63
	Arith.	0.97	0.44	-2.32	0.63
Reciprocal	Arith.	0.49	0.23	-0.06	0.17
	Harm.	0.78	0.34	-0.09	0.25
Log-reci-procal	Arith.	0.35	0.27	0.12	0.15
	Harm.	0.55	0.39	0.19	0.23

Source: Authors' calculation

*Note: Income elasticities of expenditure for the subgroup Cigars and cigarillos are not shown due to insufficient number of observations in the sample

Table 5 provides an overview of income elasticities of demand for two subgroups of tobacco products, separately for the subsample of tobacco consuming households and the entire sample that includes non-smoking households. Numerical values of income elasticities of expenditures estimated on the basis of representative functional forms of Engel curves indicate that the demand for certain products belonging to these subgroups is also inelastic in relation to household income. A similar result was reached by authors Nguyen, Rosenqvist, and Pekurinen (2012) who studied the dependence of cigarette expenditure on household income in Finland.

By comparing the income elasticities of expenditures of all households included in the sample with the income elasticities of expenditures of the subsample of households in which at least one member has expenditures on tobacco products, based on the corresponding representative functional forms the conclusion can be drawn that differences in income elasticities are not significant.

In addition to quantifying the impact of income that sets the framework for household consumption, the paper examines the impact of qualitative, socio-economic and demographic factors on tobacco consumption in Serbia. The influence of these factors was examined by introducing artificial variables into the consumption model. This segment of the research was conducted in two phases. In the first phase, hypotheses on the influence of qualitative factors were tested using the F and t-test, according to the number of modalities of the observed factors. In the second phase the assessment of parameters was made – evaluation of indicators of the influence of qualitative variables which have statistically significant influence on the consumption of tobacco and tobacco products.

Based on the value of t statistics and the realized level of significance (Prob> t = 0.7996), it can be reliably concluded that the variable Gender of the household head does not significantly affect the behavior of households in terms of tobacco consumption. The hypothesis about the influence of the level of education of the household head on the dependence of expenditures on the amount of income was tested using F statistics. The realized value of F statistics and the associated level of significance (Prob> F = 0.0028) suggest that the hypothesis that the level of education of the household head determines the differences in the behavior of households in the domain of tobacco consumption and tobacco products can be accepted.

The level of education of the household head significantly affects the demand for tobacco in the sense that the demand of households whose head has completed only primary school is elastic (income elasticity is 1.14), while the demand of households whose head has acquired higher education is inelastic (income elasticity 0.35), implying that with the increase of the formal level of education of the household head, the income elasticity of the demand for tobacco decreases. This result coincides with the findings of the authors Çetinkaya, Erkam and Basaram (2014) who investigated this phenomenon in Turkey.

Using the same methodological approach, the following was found: there are significant regional variations in household behavior patterns; household size is a significant determinant of household behavior as a consumer of tobacco products; and there are no statistically significant differences in the behavior of rural and urban households. Based on the obtained results, it follows that the demand for tobacco has a different status in households belonging to different regions: in households in Southern and Eastern Serbia tobacco has the status of a luxury product (income elasticity 1.17), in households living in Sumadija and Western Serbia the product has the status of a relatively luxurious or relatively necessary product (income elasticity 1.06). The relative impact of income on tobacco expenditure is different for households with different numbers of members, which is reflected in a wide range of variation in the numerical values of income elasticities depending on the number of household members.

Table 5. Income elasticities of tobacco expenditure of certain categories of households estimated on the basis of alternative functional forms of Engel curves

Qualitative features	Modalities	Lin	Log-log	Log-lin	Lin-log	Qua	Rec	Log-rec
Level of education of the head of the household	No education*	0.53	0.64	0.00	0.49	0.59	0.13	0.17
	Elementary	0.47	0.69	0.00	0.57	**1.14**	0.33	0.44
	Secondary	0.46	0.57	0.00	**0.50**	0.75	0.27	0.35
	Tertiary/Higher	0.47	0.40	0.00	0.50	**0.35**	0.26	0.25
Number of household members	1	0.38	0.71	0.00	0.54	1.04	0.41	**0.58**
	2-4	0.40	0.51	0.00	**0.47**	0.46	0.29	0.35
	5-7	0.43	0.64	0.00	0.53	0.52	0.39	**0.52**
	More than 7	0.35	1.20	0.00	0.43	1.76	0.35	**0.98**
Region	Belgrade	0.36	0.47	0.00	0.38	0.48	0.20	**0.26**
	Vojvodina	0.62	0.79	0.00	0.71	**0.78**	0.29	0.41
	Šumadija and Western Serbia	0.30	0.47	0.00	0.42	**1.06**	0.25	0.30
	Southern and Eastern Serbia	0.44	0.61	0.00	0.53	**1.17**	0.31	0.40

Source: Authors' calculation

*Note: This result is not statistically reliable due to the insufficient number of observations in this subsample of households

Conclusions

Based on the numerical values of income elasticities of tobacco expenditures, estimated on the basis of micro data from the Household Budget Survey in 2019 using seven functional forms of Engel curves, it can be reliably concluded that household expenditures on tobacco in Serbia are inelastic in relation to income.

Using the same data and functional forms of Engel curves, household income elasticities were estimated for two subgroups of tobacco expenditures (Cigarettes, all types; and Tobacco, cigarette paper and filters) while for the third subgroup (Cigars and cigarillos) into which total expenditures are broken down, income elasticity could not be accurately estimated due to an insufficient number of observations. In line with the expected result, the demand for products belonging to the two mentioned subgroups of tobacco expenditures in 2019 was also inelastic in relation to household income.

In addition to quantifying the impact of income on household expenditure on tobacco as a group of tobacco products and two basic subgroups which have a dominant share in total tobacco expenditure, this paper examines the impact of a number of qualitative or demographic and socio-economic characteristics of households i.e. the impact of a head of the household on demand for tobacco products. Based on F-statistics, qualitative variables with three or more modalities were identified, which significantly affect demand, while the influence of qualitative variables containing only two modalities was tested using the t-test.

Based on the calculated value of F-statistics and the corresponding associated level of significance (p-value), the hypothesis was confirmed that the level of education of

the household head, size and regional affiliation of the household affect the demand for tobacco products. Based on the empirical value of t-statistics or realized level of significance (p-value) the hypothesis is rejected that the gender of the household head and the type of settlement (urban / rural) affect the demand for tobacco products.

This finding on the absence of significant differences in the behavior of rural and urban households, and male or female household heads is completely different from the empirical results obtained by other cited researchers who examined the impact of these household characteristics.

From the set of obtained results, the following can be singled out: The level of education of household heads significantly affects the demand for tobacco meaning that the demand for tobacco of households whose head has completed only elementary school is elastic (income elasticity is 1.14), while the demand of households whose head has acquired higher education is inelastic (income elasticity 0.35), implying that as the formal level of education of the household head increases, the income elasticity of tobacco demand decreases.

Regarding the influence of the regional factor on the demand for tobacco, it was found that the demand for tobacco has a different status in households belonging to different regions: in households in Southern and Eastern Serbia tobacco has the status of a luxury product (income elasticity 1.17), in households living in Šumadija and Western Serbia, this product has the status of a relatively luxurious or a relatively necessary product (income elasticity 1.06), while for households living in Vojvodina and Belgrade, tobacco has the status of a necessary product (income elasticities are 0.78 and 0.26, respectively).

The impact of income on household expenditures with different number of members is different and, measured by the income elasticity ratio, it varies from 0.47 to 0.98, whereby based on representative functional forms of Engel curves, an unambiguous relationship between the number of household members and the level of income elasticity could not be established.

Conflict of interests

The authors declare no conflict of interest.

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CONCENTRATIONS OF ECONOMIC ENTITIES IN THE LAW OF THE EUROPEAN UNION AND THEIR CONNECTION WITH THE AGRICULTURAL SECTOR

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ABSTRACT

Purpose The paper should confirm that concentrations of economic entities, which perform agricultural or other activities, in addition to distorting competition, are frequent cases of competition protection on the European Union market.

Methodology The paper uses dogmatic and normative method that highlights existing legal solutions and indicate the directions of *de lege ferenda* solutions and method of content analysis.

Results Concentrations of business entities are playing an increasing role in the world economy and law. The process of globalization of international trade and increasing competition among businessmen, especially in the countries of the European Union, have contributed to this.

Conclusions Concentrations of business entities are important in creating market monopolies and they represent means of protecting the global market.

Recommendations An important aspect of the concentration is its compatibility with the global market, otherwise, the application of temporary measures is recommended in order to restore the previous state.

Introduction

According to Article 4, paragraph 1. community policy is conducted in accordance with the principles of an open market economy and free competition, and the basic rules on competition are contained in Art. 81-89 EEC (Title VI, Section 1). Articles 81 and 82, which contain rules on the prohibition of cartels and on the prohibition of abuse of a dominant position (Stanivuković, 2009), are particularly relevant. Taking certain actions that lead to a change in the number of market participants, i.e. its reorganization, leads to a decrease in competitive pressure. Competition among businessmen in the global market, especially in European Union countries, has led to

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the adoption of regulations within the framework of the Community acquis, which will comprehensively regulate this area, as competition from the outside, especially from the USA and Japan, has become increasingly fierce. It was therefore necessary to strike a balance between the need to strengthen economic activities for fear of overhauling the common market. In this regard, the Community institutions have, inter alia, adopted *Regulation 139/2004 on merger control, Regulation 802/2004 on implementation of Regulation 139/2004*, and a number of Guidelines, with particular reference to the 2007 *Consolidated Jurisdictional Notice* (hereinafter: The Notice). We are witnessing that the agricultural sector has been under the auspices of foreign capital in the last decade. Large state-owned agricultural chains are being purchased, so the legal regulation in use throughout the European Union is of great interest and importance to countries waiting to join this organization, and such are the countries of the Western Balkans.

The subject of this paper is the exploration of key regulations that point to the emerging forms of permitted and prohibited concentrations that appear in the common market, which may also affect countries awaiting accession to the European Union. The aim of the paper is to find the most favourable conditions for the implementation of certain forms of integration, without the result of prohibited concentrations of companies.

The concept of concentration

In recent years, we have witnessed the joint appearance of business entities in certain business operations, in order to meet the stringent requirements of the market. Joint ventures or concentrations of companies can be done in several ways, such as fusion, the purchase of parts or entire companies, or as a joint venture of two companies (Spasić, 2017). The common agricultural policy of the European Union is based on the establishment of common organisation of agricultural markets, which depending on the type of product, can have several forms: common competition rules; mandatory coordination of different national market organisations and European market organisations. The common market organisation shall be limited to the achieving the objectives of the common agricultural production and shall exclude any discrimination between producers or consumers within the union (Treaty 2010/C 83/01, art.40). Accordingly, the topic of this research relates to the organisation of the common market on the principle of competition rules (Andrei et al., 2020). The method of formation of concentrations also represents the basis for distinguishing possible types of concentrations (Ciutacu & Chivu, 2014). The way in which the concentrations occur is also the basis for distinguishing the possible types of concentrations. In this sense, concentrations may arise through statutory changes in companies (reorganization), and by acquiring certain shares in a company, that is, by linking companies with financial participation, i.e. by acquiring one part of the shares of a certain company and gaining control in the management of the companies. While merging of companies has the character of a status change, the acquisition of participation creates different forms of connection that create subsidiaries (holding companies, concern groups and other groups). Merger is a status change within which two types of merger occur, namely merger through

annexation and establishment (Mićović, 2010). Merger refers to a process in which one or more companies transfer their entire assets to another existing company or to a newly formed company, which issues to the shareholders of the merged companies their shares in proportion to their participation in the previous and new companies (Jevremović Petrović, 2010). On the other hand, linking companies with financial participation and gaining control in another company represent economic concentration.

The main difference between merging through financial participation and annexation is that the status change of the merger is based on the consent of the companies participating in this procedure, as well as the conclusion of contracts between the companies. However, in a purely economic takeover there is no conclusion of any contract, but shares are directly bought from the shareholders of the company being acquired (Jevremović Petrović, 2010; Odeny et al., 2020). The concentration of companies is reflected in the greater or lesser transformation of the merged and acquiring society, enabling progress and adaptation to modern economic life (Pantić et al., 2020). According to this author, such concentrations stem from the need for mergers of companies (Cheminade, 1970). EU law has favoured concentration as a form of freedom of association for market participants, but also as a way of enhancing the competitiveness of European companies' vis-à-vis non-European companies on the world market, especially large US companies (Gavric Stepanovič, 2000). Issues of the occurrence of concentrations at European Union level are governed by the norms of the Community acquis. Community acquis prescribes that concentrations include the fusion of two or more previously independent entities or parts of an enterprise, the acquisition or purchase and joint business ventures (Regulation 139/2004). Within this introductory debate and definition of concentrations, it is worth noting that Concentrations, i.e. fusions, can be horizontal, vertical and conglomerate. Horizontal fusion is the merger of companies at the same level of the production chain, as opposed to the vertical merger, which is the merger of companies at different levels of the production chain, for example the fusion of manufacturers and distributors (Chivu, 2019). Finally, conglomerate (combined) fusions are mergers of companies that are motivated by the desire to reduce costs and risks of doing business, and take place between companies with completely different business activity (Vasiljević, 2004). In EU law, all forms of integration are regarded as concentrations (Spasić, 2007), and their regulation takes place under specific regulations at EU level. Such a document is the Regulation on Concentrations (hereinafter: the Regulation), which is applicable to concentrations that have a communitarian dimension, and which is determined on the basis of the turnover of participants in it. According to the Regulation, the concentration has a communitarian dimension where the total annual turnover of all related undertakings exceeds EUR 5 billion and where the total turnover at Union level of each of at least two related undertakings exceeds EUR 250 million, unless each of the undertakings concerned generates more than two-thirds of its revenue at Union level within the same Member State (Regulation 139/2004). In the event that the concentration does not meet the conditions of Article 1 (2) of the Regulation, the concentration will have a

communitarian dimension if the combined total annual turnover of all the undertakings concerned is more than two and a half billion euros, where in each of at least three Member States the total turnover of all related undertakings exceeds EUR100 million, where in each of the at least three Member States referred to in paragraph (b) the total turnover of each of at least two given undertakings exceeds EUR25 million and where the total turnover at Union level of each of at least two related undertakings exceeds EUR 100 million, unless each of the given companies achieves more than two-thirds of its total turnover at the level of the Union in the context of one and the same Member State (Regulation 139/2004). However, the turnover of the undertakings concerned may be calculated (i) on the basis of the turnover of those undertakings to which that undertaking has relations, which consist of the rights or powers referred to in Article 5 (4) of the Regulation, in order to determine whether the thresholds referred to in Article 1 of the Regulation are fulfilled (Commission Jurisdictional Notice, 2004). Such concentration criteria are intended to distinguish concentrations having a European dimension from concentrations of minor importance, and also these criteria indicate that concentrations are reported only if undertakings with large capital participate in it.

Applicable law and jurisdiction to assess concentration

In determining the rules to be applied to the regulation of concentrations, the starting point is the rule according to which the law of a Member State will apply to concentrations which have no communitarian dimension. However, even in situations where a particular concentration is judged to have a Communitarian character, the assessment can be transferred to the national competition authorities and vice versa. This possibility was confirmed in the *Commission Notice on Case Allocation under the Referral Rules of the Merger Regulation*, which emphasized that jurisdiction should only be re-attributed to another competition authority only in circumstances where the latter is more appropriate for dealing with fusion, having regard to the specific characteristics case as well as the resources and expertise available to the agency (Commission Notice, 2005). In addition, it is very important that the transfer of jurisdiction is made in a situation where there is a compelling reason for it and especially at the stage after notification of the concentration in question (Commission Notice, 2005). The concentration notification is based on a good coordination of relations between the Commission and the competent authorities of the Member States, with the Commission having the possibility to refer the notified concentration to the appropriate authorities of the Member States to assess whether it is in accordance with national law. In such a case, the Member State shall, within 15 working days of receipt of the copy of the notification, inform the Commission whether the concentration in question threatens to significantly affect competition in that country's market and whether it may create or strengthen its existing dominant position. If the Commission considers that there is a different (special) market and threats to competition in it, it may itself resolve the case in accordance with the Regulation or refer all or part of the case to the competent authorities of the Member State concerned, where the case would be resolved by applying a national Community

acquis. In order for this possibility to be implemented, a Member State must make a corresponding request to the Commission within 15 working days of receiving a copy of the concentration notification from the Commission (Regulation 139/2004). The Commission decides whether to refer the case to the competent authorities of the Member States or to decide on the case itself. Referrals may be made only if the Member State makes an appropriate request and if the Commission determines that the conditions relating to the specificity of the market in the territory of the Member State are fulfilled, as well as the possibility of jeopardizing competition therein (Regulation 139/2004). If the conditions are not met, the Commission will inform the Member State accordingly. A Member State may appeal to the Court of First Instance against the decision of the Commission. Bearing in mind that such a solution was incorporated into the Decree at the request of Germany, it became known as the *German clause*. It was used in the case of *Steetley plc/Tarmac*, where it was a fusion between *Steetly* and *Tarmac* company, both of which had a high share of the brick and clay market in some parts of England. The Commission found that the brick market was regional in nature and that the trade in clay tiles between the UK and the rest of the Union was of low intensity, justifying such an attitude by different economic indicators. It is, therefore, considered that this is a particular market, the UK market, where such a concentration could cause adverse competitive effects. For these reasons, the Commission decided to refer the fusion case for resolution to the UK competent authority in accordance with domestic regulations (Case Steetly/Tarmac IV/M.180,1992). A Member State may take appropriate measures to protect legitimate interests not protected by the Regulation in question, such as public security, media plurality and prudential rules, and any other public interest must be transferred to the Commission by the Member State concerned. The Commission shall inform the Member State concerned of its decision within 25 working days of notification (Regulation 139/2004, Art. 21(4).). This was the procedure in the case of *Newspaper Publishing*, where the UK authority took steps against the fusion in question justifying such an act by preserving media plurality (Case Newspaper Publishing IV/M.423.), and in the case of *Lyonnaise des Eaux SA / Northumbrian Water Group*, where the UK Competition Commission applied national regulations concerning the regulation of the drinking water market. Namely, here the Commission started from the standpoint that it represented a legitimate public interest for the Member State concerned, especially given the privatization of the sector and the desire to preserve competition, that is, a sufficient number of water suppliers. This enabled the competent British body to prohibit any fusion that would exceed a certain, pre-defined level (Case N IV/M567, 1996). A Member State may take the measures necessary to protect the essential security interests of its security related to the production or trade in arms, ammunition and war material (EC Treaty 2002, art.296(1)(b)), and practice has confirmed this derogation. Thus, in the case of *British Aerospace / GEC Marconi*, the United Kingdom ordered the parties of the concentration not to notify the military part of the concentration in accordance with Article 296 (1) (b) of the EC Treaty, justifying such an act as essential to its security, with which the Commission agreed (Case British Aerospace/GEC Marconi, 1999) C241/8.). One or more Member States may request the

Commission to examine any concentration which has no communitarian dimension but which affects trade between Member States or threatens to significantly distort competition within the territory of the Member State or Member States making the request (Regulation 139/2004, art. 22). This provision was introduced at the request of the Netherlands (which is why it was called the 'Dutch clause') and was motivated by a desire to meet Member States that did not have their own fusion control regulations at the time. In order for the Commission to examine the concentration in the case of a Dutch clause, it is necessary for a Member State, or others, to make a specific request to the Commission to that effect (Regulation 139/2004). One of the cases in which the Commission prohibited a concentration in accordance with the above procedure was *Kesko/Tuko* and the ban was enforced at the request of the Finnish Free Competition Office. Although this was not a concentration of a communitarian nature, it was found that it could have had a significant adverse effect on trade between Member States, which was sufficient for the Commission to respond positively to the request of the competent Finnish authority and to prohibit the concentration in question (Case IV/M.784). Implementing Regulation 802/2004 prescribes the form and content of the notice to the Commission, which must be complied with, because in the event that the notification has certain deficiencies (it is not complete), the Commission will not accept it. It is therefore advisable for undertakings to consult the Commission before notification in order to avoid any shortcomings in the notification, and in particular to reduce the amount of information that the notification must contain (Commission Notice, OJ 2005/C 56/04). The Commission, in accordance with Article 14 (2) (a), has the right to impose fines in the event of non-compliance with the obligation of notification (intentional or negligent), which may not exceed 10% of the total turnover of the undertakings concerned (Regulation 139/2004, art. 14(2)(a).).

Control of concentration and Commission decisions

It could be said that the ability to control concentrations is the most important characteristic of concentrations, and concerns the possibility of gaining control of another market participant after the concentration has taken place (Rakić, 2014). About that, upon receipt of the notification of the concentration, the Commission will examine whether the notification is covered by the Regulation, after which it must take the appropriate decision within 25 days (Regulation 139/2004, Art. 10(1).), so if the Commission finds that the concentration in question does not fall under the Regulation, it may decide that the concentration is not in the domain Community acquis (Regulation 139/2004, Art. 6(1)(a).). On the other hand, it may decide that the concentration in question is compatible with the common market or make the concentration compatible by accepting certain obligations by the participants (Regulation 139/2004, Art. 6(1)(b).). The Commission may also find that the concentration covered by the Regulation raises "serious doubts" about compatibility with the common market (Regulation 139/2004, Art. 10(3).). It should be borne in mind that if the concentration is found to be incompatible with the common market and the parties have already implemented the concentration, the Commission has the option of using *provisional measures* or even ordering the concentration to be reversed in order to regain its status. However, if

restoration is not possible, then the Commission may take "other appropriate measures" to achieve the same objective (Provision 139/2004, art. 8.). The regulation allows for effective control of all concentrations, providing that any concentration that would significantly impede effective competition in the common market, or in a substantial part of it, should be declared incompatible with the common market (Provision 139/2004, art. 25.). Given that horizontal fusions are the most dangerous for the competitive process, the Commission has issued the *Horizontal Merger Guidelines* (hereinafter: the Guidelines) (Horizontal Merger Guidelines, 2004). According to these Guidelines, the creation or strengthening of a dominant position is the primary form of aforementioned impediment to effective competition in the common market, with the central issue being the determination of the relevant market. Given that the determination of the relevant market has another dimension, (product / service, geographic market) only the most significant determinants will be highlighted here (Guidelines, 2003). *Procter&Gamble vs. VP Schickedanz* case has shown that the Commission pays much more attention to demand side factors (Case IV/M.430, (1994) OJ L354/32, (1994) 5 CMLR 146.). Sometimes the factors on the supply side may not be relevant, as the *Nestlé / Perrier* case has shown, where the Commission considered the bottled spring water market as a relevant product market, relying on manufacturers' ability to easily 'reorient' to production of another product (Case IV/M.190, (1992) OJ L356/1, (1993) 4 CMLR M17.). With regard to the relevant geographic market, the Commission has, in the case of *Gencor/Lonrho (*Case IV/M.619.), taken as a relevant geographic market the global market for metallic products (especially platinum) due to its wide application, high volume of trade and cheaper transport, and in the case of *Shell/Montecatani* the reason for wide definition of the geographic market (world market) was a character of the product, since its production required large investments in research and development (Case IV/M.269 Shell/Montecatani, 1994). Sometimes the geographic market was of a national character, or even more narrowly defined, as in the case of *Nestlé/Perrier*, where the Commission designated the French market as the relevant geographic market, due to relevant market factors (Case Nestlé/Perrier-see OJ, 1992). Sometimes the relevant geographic market is determined in view of the fact that the economic integration of the Member States is growing stronger and that trade barriers are eliminated, as in the case of *Alcatel / Telettra (*Case IV/M.42, (1991) OJ L122/48, (1991) 4 CMLR 778.) and *Alcatel/AEG Cable* (Case IV/M.165, Alcatel/AEG Kabel (1992) OJ C6/23.). Here, despite the large market share acquired through the merger, the Commission approved the notified concentration.

Types of concentrations

The degree of competitive relationship existing between the parties to the concentration is the basis for the division of concentrations into horizontal, vertical and conglomerate ones. The Concentration Assessment Test is common to all forms as well as the financial amounts for the Concentration Report, however, the Concentration Assessment Criteria differ, and the Guidelines for the Assessment of Horizontal Concentrations and the Guidelines for the Evaluation of Vertical and Conglomerate Concentrations have been developed, with the criteria being the most stringent for the assessment of horizontal concentrations. The different criteria for the assessment of concentrations in their

tests also indicate the application of special rules, and the competent authorities that conduct the concentration are required to demonstrate, in each case, the adverse effects of concentration on competition. Horizontal concentrations directly (by reducing the number of competitors) influence the creation of non-competitive market structures, leading to a decrease in competition in the market. On the other hand, vertical and conglomerate concentrations can indirectly affect competition, first by establishing entrance barriers for new competitors, that is, by controlling the market entry process, which is why they are often classified into a separate group (non-horizontal concentrations), (Begović, 2002). Numerous benefits realized in horizontal and vertical concentrations are made possible by the structural links that exist in minority ownership between two market participants operating in the same or a related market, by investing equal market participants in the equity of other market participants (Begović, 2014).

Horizontal concentrations

As noted earlier, horizontal concentrations take place between business entities operating at the same level of the production or transport chain, or rather, between direct competitors in the market. After defining the relevant market, the Commission will look at the degree of market concentration, relying on both the magnitudes of the parties to the concentration and the aforementioned *Herfindal-Hirschman Index*. Such a view is made in the Horizontal Fusion Guidelines, which states that market shares and concentration levels give the first indication of the market structure and competitive importance of fusion participants and their competitors (Guidelines, 2003). Very large market shares, of 50% or more, can themselves be evidence of a dominant position, as opposed to a situation where the market share of the related companies does not exceed 25%. In the latter case, the concentration will be deemed not to interfere with effective competition. However, in the same paragraph, the Commission points out that a market share of less than 50% and more than 25% may pose a problem, given the strength of competitors, the existence of capacity constraints, or other factors (Guidelines, 2003). Practice has shown that the Commission is sensitive when it comes to fusions involving companies producing interchangeable products, that is, substitutes, and in particular when competing manufacturers do not produce sufficiently ‘’close’’ substitutes to the products of fusion participants. Thus, in the case of *GE/Instrumentarium*, the Commission expressed doubts as to the compatibility of the fusion companies GE and Instrumentarium, which were manufacturers of medical equipment. Given the high degree of substitution that existed between their products, the Commission concluded that the fusion in question could adversely affect competition, and ordered the companies concerned to take a number of measures to eliminate the negative effects (Case COMP/M.3083, IP/03/1193.). Similar was the case with *T-Mobile/tele.ring (*Case COMP/M.3916). Horizontal Fusion Guidelines predict that the reasons for banning fusion may be the inability of customers to protect themselves from price increases by changing suppliers (Horizontal Merger Guidelines, 2004), the inability of competitors to increase their deliveries (Horizontal Merger Guidelines, 2004, OJ C31/5.), but also

the situation where fusion involves a company having a significant impact on the dynamics of competition, especially if it represents an important driver of innovation in the market (Case Boeing/McDonnell Douglas IV/M. 877, 1997). On the other hand, the assessment of horizontal fusion compatibility can be particularly helpful in assessing barriers for entering the relevant market. In this regard, the Commission may approve a concentration that includes players with an extremely large market share, provided that there is a realistic possibility of entering the market of new competitors. Nevertheless, this new market entry must be plausible, timely and sufficient to deter or counteract any potential anti-competitive effects of fusion (Horizontal Merger Guidelines, 2004). Entry is likely if it is profitable enough for a new entrant to bring additional output to the relevant market (Horizontal Merger Guidelines, 2004). At the same time, the Commission took the stand that entry into the market would be considered '' timely '' if it came within two years (Horizontal Merger Guidelines, 2004). Fusion in the common market can significantly impede effective competition by creating or strengthening a collective dominant position. In such a situation, companies are more likely to be able to coordinate behaviour and increase prices, even without concluding agreements or resorting to concerted practices within the meaning of Article 81 of the Treaty (Horizontal Merger Guidelines, 2004). Horizontal fusion may be granted where it is provided with efficiency, whereby the benefits of fusion to consumers outweigh any adverse competitive effects (Horizontal Merger Guidelines, 2004). Fusion can be compatible with the common market and based on a call to the so-called ''*Failing Firm Defence*''. Namely, if one of the parties to the concentration is a so-called 'weakening company' and provided that the fusion does not cause deterioration in the competitive structure, the Commission may consider the fusion in question compatible with the common market, although the same fusion would otherwise be prohibited (Horizontal Merger Guidelines, 2004). In practice, the defence was applied in the case of *Kali und Salz/MdK/Treuhand (Commission Decision, 1993,* Case IV/M.308, (1994) OJ L186/30, (1994) 4 CMLR 526), as well as in the case *of BASF/Pantochim/Eurodial* or the case of *Newscorp/Telepiù (*Case BASF / Pantochim / Eurodial IV/M.2314, IP/01/984; Case Newscorp / Telepiù IV/M.2876). In addition to horizontal fusions, there are vertical and conglomerate fusions, which are more closely regulated by the *Guidelines on the assessment of non-horizontal fusions* in accordance with the *Council Regulation on the Control of Concentrations between Enterprises* - hereinafter referred to as GNF (GNF, 2008). Although non-horizontal fusions are less dangerous for competitive processes, they can also be detrimental to competition on certain occasions.

Vertical concentrations

Unlike horizontal concentrations, vertical concentrations take place between the market levels of the chain of production, that is, the companies that relate to each other as buyer and seller, through which competitors in the downstream market can restrict access to key markets, which is a major threat to competition. Vertical concentrations represent one of the groupings for the non-horizontal fusions mentioned above. According to the GNF, there are two ways in which non-horizontal fusions can impede effective competition:

non-coordinated effects and *coordinated effects*. Uncoordinated effects occur when non-horizontal fusions lead to foreclosure that is, preventing rivals from accessing the supply or the market. The coordinated effects are being altered by the very nature of competition that existed before the fusion, as companies will now have a much greater incentive to raise prices and, in general, disrupt competitive relationships (GNF, 2008, art.17-19). In this situation, the Commission will also, when assessing compatibility, rely on the market share of the new entity resulting from the fusion in question. The merger in question will be allowed if the newly acquired entity's market share is below 30%. These are only starting indicators in the assessment, not legal assumptions (GNF, 2008, art. 23-27). In terms of *uncoordinated effects*, namely, denial of market access, two manifestations of this behaviour can be distinguished: when the fusion in question can increase the costs of competitors in the downstream market by restricting their access to important input and when fusion with rivals restricts access to consumers. In both cases, it is not necessary for rivals to be completely driven out of the relevant market, but it is important whether the increase in input costs will eventually lead to higher prices for consumers or not (GNF, 2008. Art.30-31, and art.58). For coordinated effects, it should be noted that such market coordination occurs in a situation where competitors are able to identify and pursue general objectives without concluding an agreement or resorting to consensual practices within the meaning of Article 81 of the Treaty. Certain conditions must be met here for coordination to be sustainable (GNF, 2008, art.80-81). Vertical fusion makes it easier to achieve behavioural coordination, since there will be fewer participants in the relevant market, it makes the coordination easier (GNF, 2008, art.82-85). It is particularly important to emphasize that this type of concentration enables the newly created entity to access sensitive information about rivals, especially if it is a downstream market (GNF, 2008, art. 86).

Conglomerate concentrations

Conglomerate concentrations involve mergers between companies operating in closely related markets, with no touch points prior to the merger. Here again, the Commission will pay attention to both the positive effects of the fusion in question and its negative anti-competitive effects. As with horizontal and vertical fusions, so with this form of concentration, there are so-called uncoordinated effects, expressed through foreclosure, for which "*tied-trade practice*" is the main instrument. Of course, the practice of tied trade (through whatever form it is expressed) will not always be impermissible, but in certain situations it will have a distinct anti-competitive effect. Here, too, the Commission must examine whether the newly created entity has the ability to exclude rivals, whether there is a corresponding economic interest, and whether such practices will have adverse effects on competition, thereby harming consumers (GNF, 2008, art.91). In order to be able to exclude competitors, a new company must possess a significant degree of market power (GNF, 2008, art.99). The exclusion of competitors through the practice of tied trade will be facilitated if a large circle of consumers buy both products in a 'bundle' rather than an individual product (GNF,2008, art.100). The Commission will consider whether there are opportunities for competitors to defend

themselves against the new entity's business strategy. Thus, in the case of *GE/Amersha*, they took the standpoint that there was no risk of foreclosure of competitors by the practice of tied trading due to the fact that competing companies were pointing out very attractive offers to consumers (Case COMP/M. 3304-GE/Amersham, 2004). A tied trading strategy, if profitable, will be tempting for an entity. However, the Commission will also take into account other factors, such as: the ownership structure of the merged entity, the type of strategy adopted in the market in the past and the content of internal strategic documents - business plans and the like (GNF, 2008, art.94). The Commission rightly considers that conglomerate fusions can contribute to cost reductions, since it is sometimes much better for consumers to sell certain products in a ''package'' than separately. This is only a rebuttable assumption given the fact that sometimes identical benefits can be realized without resorting to tied trade (GNF, 2008, art. 118). With regard to the coordinated effects of *mutatis mutandis*, what is contained in the Horizontal Fusion Guidelines applies (GNF, 2008, art.119-121).

The solutions provided by other provisions of EU law

Should the Commission consider that the concentration in question is likely to be incompatible with the common market, the parties to the concentration may propose *modifications to their concentration plan* and offer certain obligations to the Commission. To this end, the Commission has issued the relevant Guidelines governing these issues (hereinafter: the Guidelines on Solutions) (Commission Notice, 2004). The Guideline states that a major distinction can be made between structural solutions and commitments that relate to the future behaviour of a fusion entity. In terms of structural solutions, the most prevalent are those consisting of the removal of a branch or production facilities. On the other hand, obligations relating to future behaviour will only apply in exceptional situations, where their usability is ensured by implementation and control. However, it must be said that it is very difficult to control their implementation (Commission Notice, 2004, art. 17). In addition to seeking to regulate all matters of Community acquis, practice sometimes denies the solutions contained in legal acts. Thus, in the case of *Schneider/Legrand*, the Commission prohibited concentration in holding that the proposed commitments were too complex and inefficient to ensure effective competition was maintained (Case COMP/M, 2282.). In order to preserve the effect of the "cure", obligations will be imposed on the merging entity that it cannot acquire influence over all or part of the separate business for a period of ten years, with the Commission being able to mitigate the obligation already imposed (Guidance on solutions, art. 43). An effective 'remedy' for the elimination of competition hazards may be considered to be the alteration or cancellation of existing exclusive contracts, which may lead to the elimination of competitors, but these acts may not constitute a 'screen' for the effective preservation of exclusivity (Guidance on solutions, Art. 68.). The parties to the concentration may also use other means to prevent the concentration from being declared incompatible with the common market. They may *promise* to refrain from certain behaviours that could jeopardize competition. However,

it is difficult to control the implementation of these solutions, so the Commission will only examine non-structural remedies in exceptional circumstances (Guidance on solutions, art. 71). Finally, the parties to the concentration may also offer the so-called *'remedies packages'*, which cover both *'divestiture'* and certain acts to which the parties to the concentration commit themselves. Even in such cases, in practice, the Commission has accepted alternative ''packages'', that is, alternative solutions that would be implemented if the original solution proposed by the parties did not produce the expected competitive effects (Case IV/M.2337, IP/01/1136).

Conclusion

Based on the presentations in this research paper, in addition to identifying some of the basic rules used to solve the problem in question in the European Union market, it is also noted that the concentrations have a dual character, i.e. that concentrations, on one hand, can be a shield against external competition, while on the other hand they can distort competition in the common market. It is evident that the relevant acts clearly regulated the procedure for notification of concentration, and through the analysis of cases it was found that concentration in many procedures was prohibited, while in other cases the notification of concentration was rejected because it was not a concentration. What constitutes the essence of this research is the observation that the concentrations of companies are the most numerous cases for the protection of competition in the European Union market, and also in the market of third countries. Practice has shown that companies tend to hide the intended concentration from the eyes of the public and the Commission. However, high financial penalties were imposed after such cases were discovered. Conduct of foreign and domestic investors in the market of goods, services and capital are typical, regardless of whether they are engaged in agricultural or other economic activity, which can be justified by the argument that the same legal rules apply to the establishment and operation of business entities independent of the economic activity they perform.

Conflict of interests

The authors declare no conflict of interest.

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POTENTIALS FOR TOURISM DEVELOPMENT BASED ON PROTECTED NATURAL RESOURCES IN MORAVICA ADMINISTRATIVE DISTRICT TERRITORY – OPINION OF THE CITY OF ČAČAK RESIDENTS

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A B S T R A C T

The purpose of this paper is to indicate the potentials for tourism development based on the protected natural resources of the Republic of Serbia situated in the Moravica administrative district territory, the degree of their current utilization for the purposes of tourism and local population information on the above mentioned. Closed-ended survey was conducted (five-point scale) on the random sample of the residents in the urban part of the city of Čačak as the administrative centre of the Moravica administrative district. The results are: 1) low degree of information among the local population, 2) medium (good) potential for tourism development, and 3) very low level of its utilization for tourism purposes. The results are also considered according to the natural resources protection type. The contribution of this paper is in the indication of potentially successful elements in future tourism offer for the entities in the field of tourism and hospitality.

Introduction

From its beginning, tourism has always been related to nature. Nature has determined, it still does, the potentials for tourism development in many regions, in combination with tourist offer social factors. According to its increasing importance, so called nature-based tourism, mainly based upon nature, takes an important place in the modern world

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(Nica et al., 2018; Popescu et al., 2017). Similar concepts are also ecotourism, green tourism, sustainable tourism, etc; what makes their essence is that they are based on natural resources of a specific climate and used for the purposes of tourism, but to the extent that allows natural resource preservation, potential improvement or completion.

If we consider nature-based tourism according to natural resource classification into geomorphological, hydrological, climate and biological, it is possible to single out and consider separately the types of tourism such as mountain tourism, speleotourism, river tourism, lake tourism, spa tourism, hunting tourism, fishing tourism, etc.

Relief shape is specific for a certain destination according to the actions of the numerous factors of its origin, as well as the factors influencing its changes. The significance of mountain tourism studies is also obvious in WoS and Scopus paper reviews conducted by Río-Rama et al. (2019). For example, Darmawan et al. (2018) contributed to nature-based tourism development through the feasibility study in Tembarak District (Central Java, Indonesia) by landscape image design creation.

Climate conditions can determine the conditions for tourism development, therefore some regions are convenient for winter tourism, others for summer tourism. The winter season can depend on climate changes, but primarily with the focus on the region where the activites are conducted, especially due to the possible extreme values (Tervo, 2008).

When we speak of flora and fauna, we should emphasize the possibilities for a large number of species, their varieties, autochthony, as well as conservation. It provides a foundation for hunting, fishing, observations, etc. Herbs should be singled out among plants since they could also provide the potential for sustainable tourism, such as the case of "Stara planina" nature park (Ratknić & Milovanović, 2016). Naturally, people contribute to more complete usage of some natural potentials, so the benefits are used for the development of various types of tourism. For example wine tourism, which is extensively researched in the scientific and professional literature (Anđelić et al., 2019), organic production, as well as rural tourism, and closely observed agritourism as an addition to the existing types of contacts with clients and agricultural product distribution already discussed by Milanovic et al. (2019) and Milanović et al. (2020).

The role of protected natural resources and areas should be particularly emphasized within nature-based tourism. Accessibility orientation is particularly important for protected natural resources and tourism development (Tverijonaite et al., 2018). Accessibility can cause positive effects (higher numbers of tourists), as well as negative effects (degradation of nature).

Schirpke et al. (2018) indicate the role of protected areas for recreational activities, while Romagosa et al. (2015), Romagosa (2018) i Puhakka et al. (2017) emphasize the role of protected areas for human health. Wolf et al. (2017) provide a systematic review of papers on the topic of the role of protected areas in transformative travel. Protected resources and areas can be a great potential for tourist offer creation; therefore, Butzmann & Job (2017) gave an example of Product-based Typology for Nature-based

Tourism (PTNT) creation accordingly, referring to the protected areas, while Arnegger et al. (2010) highlighted their product-based typology.

Needless to say, there are also possible negative effects of tourism development in protected areas. Maldonado-Oré & Custodio (2020) indicate the negative impact of tourists on protected natural areas, while Muboko et al. (2016) emphasize the examples of illegal hunting and wild animal poisoning. Visitor protection is also significant, along with tourist satisfaction, which is confirmed by Kubo & Shoji (2016), Gstaettner, Kobryn et al. (2019), Gstaettner, Lee et al. (2019). According to the tendency for protected areas preservation, Weaver & Lawton (2017) highlighted the significance of the third generation model, Snyman & Bricker (2019) indicated that benefits should not be observed through financial aspect alone, but also through the benefit-sharing concept, while Slocum (2017) regarded simultaneous tendencies towards both sustainability and neo-liberalism. Yuan et al. (2015) established the subject area of sustainable tourism in the third place according to the number of documents, that is, papers (184) in ten leading journals in the field of tourism between 2008 and 2012. This subject area also includes four subtopics: Sustainability, ecotourism and environment (74); Climate change, carbon emission and travel scenario (60); Corporate social responsibility and green tourism (36); Tourism in protected areas (14).

Muñoz et al. (2019) indicate certain differences among local, domestic and foreign tourists in relation to the tourist values in protected areas, where we could highlight the significance of local tourists arising from the local population. This significance is also confirmed by Queiros & Mearns (2019), implying local population attitudes on using protected areas for the purposes of tourism, based on benefits and losses comparison. Local population should be able to provide the best evaluation of the potentials because, in perspective, they have the best knowledge about the surrounding natural resources. Numerous authors delt with local population attitudes on tourism in nature – Chiu et al. (2016), Zhang & Chan (2016), Lindberg & Veisten (2012), etc.

Therefore, natural resources can contain great tourist potentials. This is the reason for many authors to assess the natural potentials for the development of tourism in certain areas. There are a lot of examples, Priskin (2001), Valjarević et al. (2017), Ghorbanzadeh et al. (2019), Hamdi et al. (2019), and others are only some of them.

It is necessary to underline that having potentials for the development of tourism based on natural resources is one thing, while using the available potentials for tourism purposes is something completely different. According to the above mentioned, the following part of this paper will point out the opinion of local population from the urban areas in the city of Čačak as the administrative centre of Moravica district on natural potentials and their utilization for the purposes of tourism, primarily when it comes to the protected natural resources.

The subject of this paper is protected natural resources of the Republic of Serbia situated in Moravica administrative district territory and their potential for the development of tourism.

The aim of this paper is to establish the protected natural resources potentials of the Republic of Serbia situated in Moravica administrative district territory, their current utilization for the purposes of tourism, as well as the level of information among the local population (urban part of Čačak) on the above mentioned protected resources.

On the basis of the previously stated subject and aim of this paper, there are the following **hypotheses**:

H1 – The population in the urban territory of the city of Čačak shows a low level of information on the protected natural resources of the Republic of Serbia situated in the territory of Moravica administrative district;

H2 – The opinion of the population in the urban territory of the city of Čačak is that there is a good potential of the protected natural resources of the Republic of Serbia situated in Moravica administrative district for tourism development;

H3 – The opinion of the population in the urban territory of the city of Čačak is that there is a high level of dormancy related to the protected natural resources of the Republic of Serbia situated in Moravica administrative district for tourism purposes.

The basic characteristics and the protected natural resources in Moravica administrative district

Moravica administrative district is a part of the Republic of Serbia, with the area of around 3016 km^2 (Moravica administrative distict, 2020), population 212603 (Statistical Office of the Republic of Serbia, 2014, p. 25); it consists of four local governments – the city of Čačak, the municipality of Lučani, the municipality of Ivanjica, the municipality of Gornji Milanovac.

The Institute for Nature Conservation of Serbia (ZZPS, 2019) analysis established (natural areas around protected cultural assets excluded) one nature park (Golija), one landscape of outstanding features (Ovčar-Kablar gorge), one area of exceptional natural beauty (Rajac), strict nature reserve (Veliki Šturac), followed by 3 monuments of nature (2 botanical – a group of eight turkey oak trees (*Quercus cerris L.*) Palibrčki cerovi, sorb tree (*Sorbus domestica*) in Prislonica village; 1 geological – "Mala Bezdan" cave), 18 monuments of nature (15 botanical – turkey oak tree – Donja Crnuća, common oak – Stražev, two common oak trees Djurdjevak, Radan's forest (in Serbian – *Radanova gora*), birch tree in Donja Kravarica, linden tree in Guča, cornel tree in Guberevci, Malt oak tree in Vlasteljice, cornel tree in Viča, field maple tree in Viča, linden tree in Pšanik, rubber fig tree - Čačak, Šumati Šumar – the Balkan beech tree, Gojković linden tree, the protected trees of Čačak; 3 geological – Rti cave, Ostrovica, Hadži-Prodan's cave).

Materials and methods

The research used surveys. The questions in the survey are closed-ended, they are based on the five-point scale assessment (1 – very low, 2 – low, 3 – medium, 4 – high, 5 – very high). There are three groups, and they refer to: (1) Information on protected

natural resources of the Republic of Serbia situated in Moravica administrative district territory, (2) Protected natural resources of the Republic of Serbia situated in Moravica administrative district territory potential for tourism development, (3) Protected natural resources of the Republic of Serbia situated in Moravica administrative district existing utilization for tourism purposes.

115 residents of the urban part of the city of Čačak territory took part in the survey, that is, from the central city zone. The city of Čačak is selected as the administrative centre of the Moravica administrative district. The survey was conducted offline, anonymously, by random sampling. We can see the structure of the samples in the following table (*Table 1.*).

Table 1. The structure of the respondents by gender, age and education level

	Gender		Years of age				Level of education		
	Male	***Female***	***≤25***	***26-40***	***41-60***	***≥61***	***Elementary***	***Secondary***	***Higher***
No.	41	74	6	37	59	13	1	79	35
%	35.65	64.35	5.22	32.17	51.30	11.30	0.87	68.70	30.43

Source: Authors' research

As we can see in *Table 1*, the total structure of the respondents is dominated by female respondents, 41-60 years of age, with secondary education. Respondents evaluated 25 protected natural resources (listed in the previous chapter of this paper), by protection type.

Results and discussion

The following table (*Table 2.*) provides an overview on local population in urban parts of Čačak information on protected natural resources of the Republic of Serbia situated in the territory of Moravica administrative district.

Table 2. Information on protected natural resources of the Republic of Serbia situated in the territory of Moravica administrative district territory

Natural resource	Information evaluation						
	Very low	**Low**	**Medium**	**High**	**Very high**	**AG**	**Desc**
Ovčar-Kablar gorge	0.87	1.74	9.57	29.57	58.26	4.43	High
Rubber fig tree – Čačak	11.30	4.35	13.04	14.78	56.52	4.43	High
Golija	9.57	22.61	36.52	15.65	15.65	4.01	Medium
Rajac	33.91	22.61	22.61	6.96	13.91	3.05	Low
Caves in Rti	66.09	6.09	11.30	6.96	9.57	2.24	Low
Linden tree in Guča	72.17	8.70	4.35	1.74	13.04	1.88	Low
Hadži-Prodan's cave	70.43	13.04	5.22	2.61	8.70	1.75	Low
Ostrovica	89.57	0.00	2.61	0.87	6.96	1.66	Very low
Sorb tree (*Sorbus domestica*) in Prislonica village	86.09	5.22	4.35	0.00	4.35	1.36	Very low

Natural resource	Information evaluation						
	Very low	Low	Medium	High	Very high	AG	Desc
Turkey oak tree – Donja Crnuća	86.09	3.48	6.09	4.35	0.00	1.31	Very low
Birch tree in Donja Kravarica	87.83	5.22	4.35	1.74	0.87	1.29	Very low
Common oak – Stražev	89.57	4.35	6.09	0.00	0.00	1.23	Very low
The protected trees of Čačak	90.43	2.61	3.48	0.87	2.61	1.23	Very low
"Mala Bezdan" cave	92.17	3.48	2.61	0.87	0.87	1.17	Very low
Cornel tree in Viča	93.04	5.22	0.00	0.00	1.74	1.15	Very low
A group of eight turkey oak trees (*Quercus cerris L.*) – Palibrčki cerovi	94.78	0.00	4.35	0.87	0.00	1.12	Very low
Gojković linden tree	94.78	1.74	1.74	1.74	0.00	1.11	Very low
Radan's forest (in Serbian – *Radanova gora*)	94.78	1.74	3.48	0.00	0.00	1.1	Very low
Field maple tree in Viča	94.78	4.35	0.00	0.00	0.87	1.09	Very low
Cornel tree in Guberevci	97.39	0.87	0.00	0.87	0.87	1.08	Very low
Two common oak trees Djurdjevak	97.39	0.87	0.87	0.87	0.00	1.07	Very low
Veliki Šturac	97.39	1.74	0.87	0.00	0.00	1.05	Very low
Malt oak tree in Vlasteljice	99.13	0.00	0.00	0.87	0.00	1.03	Very low
Linden tree in Pšanik	99.13	0.00	0.00	0.00	0.87	1.03	Very low
Šumati šumar – the Balkan beech tree	99.13	0.00	0.87	0.00	0.00	1.03	Very low

Notes: The percentage (% - very low, low, medium, high, very high) is calculated out of the total number of the respondents (115); AG – Average grade; Desc – Description – average grade (AG): very high $4.5 \leq AG \leq 5$, high $3.5 \leq AG < 4.5$, medium $2.5 \leq AG < 3.5$, low $1.5 \leq AG < 2.5$, very low $1 \leq AG < 1.5$; The order starting from the highest to the lowest average grade (AG).

Source: Authors' research

It is evident that information level on none of the resources is evaluated as very high (0.00%), while high information level is present on two of the resources (8.00%), both from the city of Čačak territory (Ovčar-Kablar gorge and Rubber fig tree), while medium information level is present when we speak about one of the natural resources (Golija). Low information level is present in four of the natural resources (16.00%). Very low, that is, insufficient level of information is the most represented – in case of 18 natural resources (72.00%).

The following table (*Table 3.*) provides the evaluation on information level about protected natural resources of the Republic of Serbia situated situated in Moravica administrative district according to the protection type.

Table 3. Evaluation on information about protected natural resources of the Republic of Serbia situated in Moravica administrative district (according to the protection type)

Protection type		No. NR	Information evaluation										Avg.
			Very high		*High*		*Medium*		*Low*		*Very low*		
			No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	
Nature park		1	0	0.00	0	0.00	1	100.00	0	0.00	0	0.00	3.05
Landscapes		2	0	0.00	1	50.00	0	0.00	1	50.00	0	0.00	3.35
Reserve		1	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1.03
Monuments of nautre	*MN-U*	21	0	0.00	1	4.76	0	0.00	3	14.29	17	80.95	1.37
	MN-B	17	0	0.00	1	5.88	0	0.00	1	5.88	15	88.24	1.33
	MN-G	4	0	0.00	0	0.00	0	0.00	2	50.00	2	50.00	1.51
TOTAL		25	0	0.00	2	8.00	1	4.00	4	16.00	18	72.00	**1.58**

Notes: No. NR – the number of protected natural resources; % - number of protected natural resources percentage; Avg. - the average – the sum of protected natural resources average grade belonging to the certain protection type divided by the number of protected natural resources in that protection type (No. NR); MN-T – monuments of nature (total); MN-B – monuments of nature (botanical); MN-G – monuments of nature (geological); TOTAL – refers to the total number of protected natural resources analyzed, where percentage and average are calculated out of the total number (25).

Source: Authors' research

Average information grade per natural resource is 1.58. When we speak of natural resources protection type, information level can be ordered as follows: landscapes (medium), nature park (medium), natural monuments/monuments of nature (very low, with the exception of geological ones – low), reserve (very low).

The following table (*Table 4.*) provides an overview of protected natural resource of the Republic of Serbia situated in Moravica administrative district territory potentials for tourism development.

Table 4. Protected natural resources potentials of the Republic of Serbia situated in Moravica administrative district territory for tourism development

Natural resource	No. of answers		Potentials evaluation					
		Very low	*Low*	*Medium*	*High*	*Very high*	AG	Desc
Malt oak tree in Vlasteljice	1	0.00	0.00	0.00	0.00	100.00	5.00	Very high
Linden tree in Pšanik	1	0.00	0.00	0.00	0.00	100.00	5.00	Very high
Ovčar-Kablar gorge	114	0.00	0.00	3.51	8.77	87.72	4.84	Very high
Golija	104	0.00	0.00	7.69	29.81	62.50	4.55	Very high
Rajac	76	0.00	0.00	19.74	35.53	44.74	4.25	High
Caves in Rti	39	0.00	5.13	20.51	38.46	35.90	4.05	High

Natural resource	No. of answers	Potentials evaluation						
		Very low	*Low*	*Medium*	*High*	*Very high*	AG	Desc
Šumati šumar – the Balkan beech tree	1	0.00	0.00	0.00	100.00	0.00	4.00	High
Hadži-Prodan's cave	34	0.00	17.65	32.35	14.71	35.29	3.68	High
"Mala Bezdan" cave	9	0.00	22.22	22.22	22.22	33.33	3.67	High
Two common oak trees Djurdjevak	3	0.00	33.33	0.00	33.33	33.33	3.67	High
Ostrovica	12	0.00	16.67	33.33	33.33	16.67	3.50	High
Rubber fig tree – Čačak	102	7.84	20.59	34.31	20.59	16.67	3.18	Medium
A group of eight turkey oak trees (*Quercus cerris L.*) – Palibrčki cerovi	6	16.67	16.67	33.33	16.67	16.67	3.00	Medium
Linden tree in Guča	32	6.25	25.00	46.88	9.38	12.50	2.97	Medium
Sorb tree (*Sorbus domestica*) in Prislonica village	16	18.75	31.25	18.75	0.00	31.25	2.94	Medium
Gojković linden tree	6	16.67	16.67	33.33	33.33	0.00	2.83	Medium
The protected trees of Čačak	11	9.09	45.45	27.27	0.00	18.18	2.73	Medium
Birch tree in Donja Kravarica	14	14.29	28.57	42.86	0.00	14.29	2.71	Medium
Radan's forest (in Serbian – *Radanova gora*)	6	16.67	33.33	33.33	0.00	16.67	2.67	Medium
Turkey oak tree – Donja Crnuća	16	12.50	25.00	56.25	6.25	0.00	2.56	Medium
Veliki Šturac	3	33.33	33.33	0.00	33.33	0.00	2.33	Low
Common oak – Stražev	12	11.11	100.00	0.00	11.11	11.11	2.33	Low
Cornel tree in Guberevci	3	33.33	33.33	0.00	33.33	0.00	2.33	Low
Cornel tree in Viča	8	25.00	50.00	12.50	0.00	12.50	2.25	Low
Field maple tree in Viča	6	33.33	50.00	0.00	0.00	16.67	2.17	Low

Natural resource	No. of answers	Potentials evaluation						
		Very low	*Low*	*Medium*	*High*	*Very high*	AG	Desc
Notes: No. of answers – the number of respondents with the information level on protected natural resource ≥2. and therefore they could evaluate the potential of the natural resource for tourism development. The percentage (% - very low, low, medium, high, very high) is calculated out of the number of the answers (No. of answers); AG – Average grade; Desc – Description – average grade (AG): very high 4.5≤AG≤5, high 3.5≤AG<4.5, medium 2.5≤AG<3.5, low 1.5≤AG<2.5, very low 1≤AG<1.5; The order starting from the highest to the lowest average grade (AG).								

Source: Authors' research

The table above shows that there are only four protected natural resources with a very high potential for tourism development (16.00%); we can make it certain for Ovčar-Kablar gorge and Golija according to the number of respondents, unlike in case of Malt oak tree in Vlasteljice and Linden tree in Pšanik evaluated by only one person each. High potential is present in 7 protected natural resources (28.00%), while medium is present in 9 (36.00%), and low in 5 (20.00%). It is evident that in none of the cases the potential can be evaluated as very low.

The following table (*Table 5.*) provides the evaluation of protected natural resources of the Republic of Serbia situated in Moravica administrative district territory for tourism development according to the protection type.

Table 5. The evaluation of protected natural resources of the Republic of Serbia situated in Moravica administrative district territory for tourism development (according to the protection type)

Protection type		No. NR	Potentials evaluation										Avg.
			Very high		*High*		*Medium*		*Low*		*Very low*		
			No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	
Nature park		1	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	4.55
Landscapes		2	0	0.00	2	100.00	0	0.00	0	0.00	0	0.00	4.37
Reserve		1	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	2.33
Monuments of nautre	*MN-U*	21	2	9.52	6	28.57	9	42.86	4	19.05	0	0.00	3.20
	MN-B	17	2	11.76	2	11.76	9	52.94	4	23.53	0	0.00	3.08
	MN-G	4	0	0.00	4	100.00	0	0.00	0	0.00	0	0.00	3.73
TOTAL		25	4	16.00	7	28.00	9	36.00	5	20.00	0	0.00	**3.33**
Notes: No. NR – the number of protected natural resources; % – number of protected natural resources percentage; Avg. - the average – the sum of protected natural resources average grade belonging to the certain protection type divided by the number of protected natural resources in that protection type (No. NR); MN-T – monuments of nature (total); MN-B – monuments of nature (botanical); MN-G – monuments of nature (geological); TOTAL – refers to the total number of protected natural resources analyzed, where percentage and average are calculated out of the total number (25).													

Source: Authors' research

Average potential grade per natural resource is 3.33. When we speak of the natural resources protection type, the potential for tourism development can be ordered as follows: nature park (very high), landscapes (high), monuments of nature/natural monuments (medium, except geological ones – high), reserves (low).

The following table (*Table 6.*) provides an overview of the existing utilization for tourism development when we speak of protected natural resources of the Republic of Serbia situated in Moravica administrative district territory.

Table 6. Protected natural resources of the Republic of Serbia situated in Moravica administrative district territory existing utilization for tourism development

Natural resource	No. of answers	Utilization evaluation						
		Very low	*Low*	*Medium*	*High*	*Very high*	AG	Desc
Ovčar-Kablar gorge	114	14.91	33.33	33.33	15.79	2.63	2.58	Medium
Golija	104	16.35	39.42	37.50	6.73	0.00	2.35	Low
Rajac	76	22.37	53.95	21.05	1.32	1.32	2.05	Low
Linden tree in Pšanik	1	0.00	100.00	0.00	0.00	0.00	2.00	Low
Linden tree in Guča	32	53.13	15.63	25.00	6.25	0.00	1.84	Low
Ostrovica	12	41.67	41.67	8.33	8.33	0.00	1.83	Low
The protected trees of Čačak	11	63.64	18.18	9.09	0.00	9.09	1.73	Low
Caves in Rti	39	48.72	38.46	10.26	2.56	0.00	1.67	Low
Rubber fig tree – Čačak	102	58.82	27.45	6.86	2.94	3.92	1.66	Low
Sorb tree (*Sorbus domestica*) in Prislonica village	16	81.25	0.00	6.25	6.25	6.25	1.56	Low
A group of eight turkey oak trees (*Quercus cerris L.*) – Palibrčki cerovi	6	66.67	16.67	16.67	0.00	0.00	1.50	Low
Hadži-Prodan's cave	34	64.71	29.41	2.94	2.94	0.00	1.44	Very low
Birch tree in Donja Kravarica	14	78.57	7.14	14.29	0.00	0.00	1.36	Very low
"Mala Bezdan" cave	9	77.78	11.11	11.11	0.00	0.00	1.33	Very low
Gojković linden tree	6	66.67	33.33	0.00	0.00	0.00	1.33	Very low
Cornel tree in Viča	8	75.00	25.00	0.00	0.00	0.00	1.25	Very low
Turkey oak tree – Donja Crnuća	16	93.75	6.25	0.00	0.00	0.00	1.06	Very low
Veliki Šturac	3	100.00	0.00	0.00	0.00	0.00	1.00	Very low

Natural resource	No. of answers	Utilization evaluation						
		Very low	*Low*	*Medium*	*High*	*Very high*	AG	Desc
Common oak – Stražev	12	100.00	0.00	0.00	0.00	0.00	1.00	Very low
Two common oak trees Djurdjevak	3	100.00	0.00	0.00	0.00	0.00	1.00	Very low
Radan's forest (in Serbian – *Radanova gora*)	6	100.00	0.00	0.00	0.00	0.00	1.00	Very low
Cornel tree in Guberevci	3	100.00	0.00	0.00	0.00	0.00	1.00	Very low
Malt oak tree in Vlasteljice	1	100.00	0.00	0.00	0.00	0.00	1.00	Very low
Field maple tree in Viča	6	100.00	0.00	0.00	0.00	0.00	1.00	Very low
Šumati šumar – the Balkan beech tree	1	100.00	0.00	0.00	0.00	0.00	1.00	Very low

Notes: No. of answers – the number of respondents with the information level on protected natural resource ≥2. and therefore they could evaluate the utilization of the natural resource for tourism development; The percentage (% - very low, low, medium, high, very high) is calculated out of the number of the answers (No. of answers); AG – Average grade; Desc – Description – average grade (AG): very high 4.5≤AG≤5, high 3.5≤AG<4.5, medium 2.5≤AG<3.5, low 1.5≤AG<2.5, very low 1≤AG<1.5; The order starting from the highest to the lowest average grade (AG).

Source: Authors' research

As it is evident from the table above (*Table 6.*), Ovčar-Kablar gorge has the best utilization (medium utilization). Most of the protected natural resources (14.56%) are represented by very low utilization, while a significant percentage has low utilization (10; 40.00%), and a small number has medium utilization (1; 4.00%).

The following table (*Table 7.*) provides the evaluation of protected natural resources utilization for tourism development according to the protection type.

Table 7. The evaluation of the Republic of Serbia protected natural resources situated in Moravica administrative district utilization for tourism development (according to the protection type)

Protection type		No. NR	Utilization evaluation										
			Very high		*High*		*Medium*		*Low*		*Very low*		*Avg.*
			No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	
Nature park		1	0	0.00	0	0.00	0	0.00	1	100.00	0	0.00	2.35
Landmarks		2	0	0.00	0	0.00	1	50.00	1	50.00	0	0.00	2.32
Reserve		1	0	0.00	0	0.00	0	0.00	0	0.00	1	100.00	1.00
Monuments of nature	*MN-U*	21	0	0.00	0	0.00	0	0.00	8	38.10	13	61.90	1.36
	MN-B	17	0	0.00	0	0.00	0	0.00	6	35.29	11	64.71	1.31
	MN-G	4	0	0.00	0	0.00	0	0.00	2	50.00	2	50.00	1.57
TOTAL		25	0	0.00	0	0.00	1	4.00	10	40.00	14	56.00	**1.46**

Notes: No. P.R. – the number of protected natural resources; % – number of protected natural resources percentage; Avg. – Average – the sum of protected natural resources average grade belonging to the certain protection type divided by the number of protected natural resources in that protection type (No. NR); MN-T – monuments of nature (total); MN-B – monuments of nature (botanical); MN-G – monuments of nature (geological); TOTAL – refers to the total number of protected natural resources analyzed, where percentage and average are calculated out of the total number (25).

Source: Authors' research

Average utilization grade per natural resource is 1.46. When it comes to natural resources protection type, utilization for tourism purposes can be ordered as follows: landscapes (low), monuments of nature (very low, except in case of geological resources – low), reserve (very low).

Conclusion

As it is evident from this research conducted in the urban territories of the city of Čačak, there is a low level of information among local population about the protected natural resources of the Republic of Serbia situated in Moravica administrative district territory. There is a high level of information only about Ovčar-Kablar gorge and Rubber fig tree, while the level is medium only about Golija. With the average level of information per protected natural resource of 1.58 (low information), we can make a clear conclusion that **H1** is confirmed. There is a very high potential for tourism development in 4 protected natural resources, high – 7, medium – 9, while the rest of the resources have a low or very low potential. The average grade on potential per protected natural resource is medium (3.33). Therefore, the aforementioned confirms **H2** hypothesis. Protected natural resources utilization for tourism development is only evaluated as medium in case of Ovčar-Kablar gorge, while it is very low or low in case of other protected natural resources. The average utilization for tourism development per natural resource is very low (1.46). Therefore, the aforementioned confirms **H3** hypothesis.

Very low information level among local population in urban areas of the city of Čačak, potential for tourism development at the medium level, as well as very low utilization of protected natural resources for tourism development in Moravica administrative district territory indicate the key issues in nature-based tourism development, especially tourism related to protected natural resources.

The limitations of this research refer to the survey intended for the population of the urban areas of the city of Čačak, not the population in the other areas of Moravica administrative district, or the absence of other subjects in tourism and hospitality sector. Previously highlighted limitations represent the foundation for further research with the focus on the complete Moravica district territory, as well as other interest groups in the field of tourism and hospitality.

Conflict of interests

The authors declare no conflict of interest.

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EVALUATIVE BIBLIOMETRIC ANALYSIS OF RECENT TRENDS IN RURAL TOURISM LITERATURE

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ABSTRACT

The development of academic thought is a slow but unquestionable process that leads to a more advanced intellectual structure of the research area. The global growth of tourism demand in rural areas has conditioned the accelerated development of rural tourism, and thus the growing interest of the academic community in this tourism specialism. In this regard, the paper aims to provide insight into recent trends in rural tourism literature and examine the intellectual structure of this discipline. A detailed review of relevant literature published in the Web of Science (WoS) tourism journals and the application of evaluative bibliometric analysis identified the predominant interests of authors and dominant research niches, the most common research regions, the most frequently used research methods, papers that had the highest impact on modelling scientific thought within the subject area, the most productive and influential journals, as well as the authors who have left the most profound trace in the analyzed discipline in the past ten years. It is expected that the paper stimulates academic discussion on the relatively steady interest of researchers and the need for further and more dynamic intellectual development in the field of rural tourism.

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Introduction

Rural areas in the last decade are going through a global crisis, as the traditional rural way of life is slowly disappearing, so the development of tourism in these areas is crucial for its preservation and prevention of assimilation with the urban lifestyle (Gao & Wu, 2017). Thus, rural tourism relies on rural "backwardness" in terms of authenticity and history, however, in the same time, it is a factor of the development and modernization of rural areas (Hjalager et al., 2018).

There is no universal definition of rural tourism, however, based on the existing literature in the field, it is commonly stated that rural tourists visit rural areas motivated by a desire for cultural and historical heritage (Blažević et al., 2018), by experiencing nature and acquaintance of local population and their customs (Cvijanović et al., 2017b; Hjalager et al., 2018) and in regard with several other reasons. Laureiro (2014) argue that rural tourism is inspired not only by the natural characteristics of the rural area but also by a whole array of accompanying "activities" (history, culture, food, customs). In contrast, some authors (Cvijanović et al., 2017a; Devesa et al., 2010) consider that the natural characteristics of the rural areas are the only important factor in the development of this type of tourism. The narrower understanding of rural tourism is also accepted by Martín and Hererro (2012), emphasizing that the central motivating moment for this type of tourism is direct contact with the rural way of life.

Park et al. (2015), point out that rural tourism is only an alternative activity in rural areas where traditional economic activities have not taken root. On the other hand, Philips et al. (2013) state that the development of rural tourism complements traditional agricultural production and reduces the risk of uncertainty of agricultural yields as the dominant source of income, which leads to faster development of rural areas. The development of rural tourism is not only a matter of local character but is a subject of broader interest (regional and national), because it generates employment and increases state revenues (Rid et al., 2014). "Rural tourism is an agent of change and an important factor of economic development with the potential to reduce the gap between rich and poor" (Su et al. 2019, p. 272) and to ensure a more even distribution of national income.

Based on the above mentioned, this paper aims to deploy bibliometric analysis of contemporary Web of Science (WoS) literature on rural tourism, to point out recent trends expressed and monitored by the academic community in terms of subject, geographical area and research methodology, as well as to identify scientific journals, papers and authors who have made the most significant contribution to modelling scientific thought within the research area in the past decade.

Materials and methods

Following the example of numerous papers in the field of tourism (Evren & Kozak, 2013; Hall, 2011; Koseoglu et al., 2016; Nusair et al., 2019), the research was grounded on evaluative bibliometric analysis that provides an objective insight into the intellectual structure of a particular area. Harzing's Publish or Perish 6.45 software was used to

conduct the bibliometric analysis. In the first step, this software was used to search for papers using keyword 'rural tourism'. The software search resulted in an initial output of 200 bibliographic items, which was then filtered by enclosing: 1) papers published in the period 2010-2019 in WoS tourism journals; 2) papers designated as an original scientific paper, review scientific paper or case study (research notes, conference reports, commentaries, research letters and editorials are omitted), 3) papers that have achieved ten or more Scopus citation per year. By applying the criteria mentioned above, a final sample of 27 papers was formed, later on, divided into two comparative five-year periods (2010-2014 and 2015-2019) to monitor the development of theoretical thought and the discipline of rural tourism in general.

In the second step, an annotated literature review was performed for each of the mentioned subperiods in order to come up into the current interests of the authors and the essence of the researched area, all in order to better understand the prevailing trends and possible directions of further development of this tourism specialism. Then, the analysis of key words was followed, which, for the sake of clear visualization of the dominant research niches, was presented not only by a spreadsheet but also by word cloud. At the same time, with an aim to compare the interests of the authors, the representation of the prevailing themes within the two comparative subperiods was examined. Finally, in addition to keyword analysis, citation analysis (specifically, Google Scholar and Scopus citation analysis) was conducted as a reliable indicator of the impact of the papers and the authoritativeness of the authors. It is essential to point out here that Scopus citations carry more weight since scientific journals are subject to strict control and quality analysis when referring to the Scopus index database. At the same time, Google Scholar operates on the principle of free and uncontrolled access. Also, Google Scholar is often characterized by duplicate entries, incomplete metadata, and the presence of non-scholarly publications (Martín-Martín et al., 2018), which can create a distorted picture of the citation and significance of individual papers. Nevertheless, the inclusion of this database is justified by the fact that it provides extra coverage of relevant literature compared to the Scopus index database, and therefore provides a broader picture of the researched issues.

Results and discussion

Search results and review of contemporary rural tourism literature

This paper examines the WoS literature on the topic of rural tourism published within the ongoing decade (2010-2019). For the purpose of comparative analysis, the selected papers were divided into papers published in the period 2010-2014 (Table 1) and papers published in the period 2015-2019 (Table 2). In addition to the basic metadata, the regions in which the research was conducted, as well as the methodology applied in the research are recorded in Tables 1 and 2.

Within the first five-year period, the following papers and questions to which the authors offered answers were singled out. Látková and Vogt (2012) examined the attitude of

the local population regarding tourism development and found that it is crucial for the development of the tourism industry. The results of the survey showed that the local population has a positive attitude towards tourism development. Devesa et al. (2010) examined the relationship between satisfaction and motivation of rural tourists on the example of one rural area in Spain concluding that satisfaction, although it is found as most important, is not the sole motivating factor. Different groups of tourists are motivated by different contents. The limitation of their research to one rural area prevents generalization, however, it provides some guidelines to managers on which specific attributes they must focus on to attract tourists (natural environment, cultural and historical heritage, well-marked hiking routes). Also, the creation of a unique, internationally acceptable questionnaire on the topic of tourist satisfaction is, in the opinion of the author, a challenge to strive for.

The issue of tourist satisfaction was also addressed by Loureiro and Kastenholz (2011). On the example of tourists from rural areas in Portugal, they concluded that satisfaction is related to the reputation of the site, where managers are crucial who must emphasize the production of autochthonous food and organization of cultural events in which tourists are particularly interested. Similarly, almost identical conclusions were reached by Philips et al. (2013) who examined the satisfaction of tourists as a factor in revisiting a tourist place. In addition, managers must be aware of the fact that the sale of arrangements depends on the innovation of online sales and the simplicity of the transaction realization since the standard way of booking is replaced by online purchase of arrangements (Martin & Herrero, 2012). In her second paper on this topic, Loureiro (2014) upgraded her previous research and concluded that the reputation of a locality depends on the degree of excitement that will affect a memorable experience of the place, and consequently attract tourists.

Rid et al. (2014) noticed the necessity of segmentation of the tourist market, which must be based on the wishes of tourists. Tourists rarely visit a tourist destination driven by a desire for a spiritual experience, although, according to research conducted by Sharpley and Jepson (2011), it can make a significant contribution to overall satisfaction. In addition, tourism development, with respect to satisfaction and wishes of tourists, is not possible without its social component. This issue has been addressed by Zhao et al. (2011), as they have highlighted its importance. The same authors focused their attention on an urge to acquaint the local population with the benefits of tourism, that was additionally confirmed within the Park et al. (2012) study as well. According to Mbaiwa and Stronza (2010), tourism development in rural areas will raise the living standard of the population faster than in communities that have already achieved a certain level of economic growth.

Table 1. Search results for rural tourism literature published in WoS tourism journals in the period 2010-2014

Author(s)	Title	Journal	Region	Method(s)
Devesa, M., Laguna, M., & Palacios, A. (2010)	"The role of motivation in visitor satisfaction: Empirical evidence in rural tourism"	*Tourism Management*	Spain	ANOVA, factor and cluster analyses
Látková, P., & Vogt, C. A. (2012)	"Residents' attitudes toward existing and future tourism development in rural communities"	*Journal of Travel Research*	/	Tourism Area Life Cycle (TALC) model
Loureiro, S. M. C., & Kastenholz, E. (2011)	"Corporate reputation, satisfaction, delight, and loyalty towards rural lodging units in Portugal"	*International Journal of Hospitality Management*	Portugal	Partial least squares–structural equation modeling (PLS-SEM)
Loureiro, S. M. C. (2014)	"The role of the rural tourism experience economy in place attachment and behavioral intentions"	*International Journal of Hospitality Management*	Portugal	Partial least squares–structural equation modeling (PLS-SEM)
Martín, H. S., & Herrero, Á. (2012)	"Influence of the user's psychological factors on the online purchase intention in rural tourism: Integrating innovativeness to the UTAUT framework"	*Tourism Management*	Spain	Unified Theory of Acceptance and Use of Technology (UTAUT)
Mbaiwa, J. E. & Stronza, A. L. (2010)	"The effects of tourism development on rural livelihoods in the Okavango Delta, Botswana"	*Journal of Sustainable Tourism*	Botswana	Case study
Park, D.-B., Lee, K-W., Choi, H-S., & Yoon, Y.-S. (2012)	"Factors influencing social capital in rural tourism communities in South Korea"	*Tourism Management*	South Korea	Binary logistic regression model
Phillips, W., Wolfe, K., Hodur, N., & Leistritz, F. L. (2013)	"Tourist word of mouth and revisit intentions to rural tourism destinations: A case of North Dakota, USA"	*International Journal of Tourism Research*	USA	Case study
Rid, W., Ezeuduji, I. O., & Pröbstl-Haider, U. (2014)	"Segmentation by motivation for rural tourism activities in The Gambia"	*Tourism Management*	Gambia	ANOVA and factor analyses
Sharpley, R., & Jepson, D. (2011)	"Rural tourism: A spiritual experience?"	*Annals of Tourism Research*	England	No specific method
Zhao, W., Ritchie, J. R. B., & Echtner, C. M. (2011)	"Social capital and tourism entrepreneurship"	*Annals of Tourism Research*	/	No specific method

Source: Author's research

Within the second five-year period, the paper which analysis will provide insight into even more recent trends and comparison with the previously analyzed period were singled out. According to Campón-Cerro et al. (2017), a decade behind us is characterized by a steady increase in tourism demand in rural areas. One of the reasons is the increased marketing activity and the ability of managers to create such an offer that will not only satisfy the tourist expectations but also make him a loyal guest. Loyalty is also achieved by realizing the expectations of tourists, which is not an easy task and shows that a positive experience has a positive correlation with loyalty (Kastenholz et al., 2018). However, loyalty is not only affected by a positive experience, but it depends on several factors: connection with the local population, local food, local beer and others (Murray & Kline, 2015). Frisvoll et al. (2015) indicated that a limited number of studies on the impact of local food on tourism development. In addition, in their research, they concluded that 25% of tourists singled out food as the most crucial factor in choosing a particular destination. According to Sidali et al. (2015), the specificity of local food is vital in attracting tourists, but insufficient marketing activity reduces promotion through local food to the experiences of previous tourists. It is essential to point out that the connection with the local population is a subject of mutual interest, given that good relation with tourists positively affect the pride of the local population and have positive effects on the quality of life (Xue et al., 2017). The pride of the local population is so pronounced that they are more willing to non-economic than economic assistance (Strzelecka et al., 2017). The economic benefits, i.e. the possibilities of earning from tourism, are apparent, but tourism is still an activity in which the more affluent layers of society are mostly involved. Tourism does not have a significant share in income generation for that part of the population that cannot be included in that group (Su et al., 2019). According to Wang and Yotsumoto (2019), not only there is not enough interest in entrepreneurial activity, but a whole range of administrative problems related to the preservation of cultural heritage makes entrepreneurial intentions challenging to realize. For this reason, there is a "conflict" of residents with local authorities, because they demand the distribution of income from tourism, although they do not participate in its creation.

Rural tourism is one of the main factors of rural development - a fact that is not given a deserved place (Gao & Wu, 2017). For the concept of rural tourism to take place it deserves, local and public authorities must support it in terms of investment activity, that will eventually lead to launching a whole range of activities and industries. One of the necessary items is undoubtedly innovation in the broadest sense of the word. However, there is a cost-effectiveness problem that is realistic in the long run. It is often the case that there is no interest or time for this long term (Hjalager et al., 2018). The importance of state intervention was also emphasized by Lane and Kastenholz (2015) in their case study. However, the peripheries have rarely been part of national tourism policies. Therefore, the transition and revision of the same are necessary for tourism in rural areas has received a deserved place (Salvatore et al., 2018). An analysis of the importance of rural tourism development was also performed by Rasoolimanesh

et al. (2017a) based on the attitudes of the local rural population. The analysis gave conflicting views which are conditioned by the economic gains from tourist visits. Those directly involved in the tourism offer had a positive attitude, while those who were not included in the offer had a negative one. Rasoolimanseh et al. (2017b) conducted a similar study on the example of residents of urban destinations arguing that a unique positive attitude of those directly and indirectly involved in the tourism industry. On the other hand, Park et al. (2015) emphasizing the rarity of research dealing with the impact of social capital on the development of rural tourism, concluded that it is important how residents perceive the socio-economic impacts of tourism. Residents' support of the rural tourism development depends on the adequacy of the management of the negative consequences of social capital.

Table 2. Search results for rural tourism literature published in WoS tourism journals in the period 2015-2019

Author(s)	Title	Journal	Region	Method(s)
Campón-Cerro, A. M., Hernández-Mogollón, J. M., & Alves, H. (2017)	"Sustainable improvement of competitiveness in rural tourism destinations: The quest for tourist loyalty in Spain"	*Journal of Destination Marketing and Management*	Spain	Partial least squares–structural equation modeling (PLS-SEM)
Frisvoll, S., Forbord, M., & Blekesaune, A. (2016)	"An empirical investigation of tourists' consumption of local food in rural tourism"	*Scandinavian Journal of Hospitality and Tourism*	Norway	Questionnaire techniques
Gao, J., & Wu, B. (2017)	"Revitalizing traditional villages through rural tourism: A case study of Yuanjia Village, Shaanxi Province, China"	*Tourism Management*	China	Case study
Hjalager, A., Kwiatkowski, G., & Larsen, M. Ø. (2018)	"Innovation gaps in Scandinavian rural tourism"	*Scandinavian Journal of Hospitality and Tourism*	Scandinavia (Denmark, Norway and Sweden)	Case study
Kastenholz, E., Carneiro, M. J., Marques, C. P., & Loureiro, S. M. C. (2018)	"The dimensions of rural tourism experience: Impacts on arousal, memory, and satisfaction"	*Journal of Travel and Tourism Marketing*	Portugal	Tourist Experience Scale – TES
Lane, B., & Kastenholz, E. (2015)	"Rural tourism: The evolution of practice and research approaches – towards a new generation concept?"	*Journal of Sustainable Tourism*	/	No specific method
Murray, A., & Kline, C. (2015)	"Rural tourism and the craft beer experience: Factors influencing brand loyalty in rural North Carolina, USA"	*Journal of Sustainable Tourism*	USA	Case study

Author(s)	Title	Journal	Region	Method(s)
Park, D.-B., Nunkoo, R., & Yoon, Y.-S. (2015)	"Rural residents' attitudes to tourism and the moderating effects of social capital"	*Tourism Geographies*	South Korea	Multi-group analysis
Rasoolimanesh, S. M., Roldan, J. L., Jaafar, M., & Ramayah, T. (2017a)	"Factors influencing residents' perceptions toward tourism development: Differences across rural and urban world heritage sites"	*Journal of Travel Research*	Malaysia	Partial least squares–structural equation modeling (PLS-SEM)
Rasoolimanesh, S. M., Ringle, C. M., Jaafar, M., & Ramayah, T. (2017b)	"Urban vs. rural destinations: Residents' perceptions, community participation and support for tourism development"	*Tourism Management*	Malaysia	Partial least squares–structural equation modeling (PLS-SEM)
Salvatore, R., Chiodo, E., & Fantini, A. (2018)	"Tourism transition in peripheral rural areas: Theories, issues and strategies"	*Annals of Tourism Research*	Italy	Cluster analysis
Sidali, K., L., Kastenholz, E., & Bianchi, R. (2015)	"Food tourism, niche markets and products in rural tourism: Combining the intimacy model and the experience economy as a rural development strategy"	*Journal of Sustainable Tourism*	/	No specific method
Strzelecka, M., Boley, B. B., & Strzelecka, C (2017)	"Empowerment and resident support for tourism in rural Central and Eastern Europe (CEE): The case of Pomerania, Poland"	*Journal of Sustainable Tourism*	Poland	Structural equation modeling (SEM)
Su, M. M., Wall, G., Wang, Y., & Jin, M. (2019)	"Livelihood sustainability in a rural tourism destination - Hetu Town, Anhui Province, China"	*Tourism Management*	China	Case study
Wang, L., & Yotsumoto, Y. (2019)	"Conflict in tourism development in rural China"	*Tourism Management*	China	No specific method
Xue, L., Kerstetter, D., & Hunt, C. (2017)	"Tourism development and changing rural identity in China"	*Annals of Tourism Research*	China	Case study

Source: Author's research

Based on the above mentioned, the following conclusions can be drawn. In the literature review related to the period 2010-2014, the papers dealing with the loyalty and satisfaction of tourists are the most common. The conclusions reached by the authors are almost identical, even though the analyses are territorially separate. The period after 2014 was marked by papers on a similar topic. Thus, the interest of the authors in both comparative periods is mainly focused on the satisfaction of tourists and the creation of their loyalty with an emphasis on the role of managers and their knowledge

and skills to make the destination attractive. However, the papers that, in addition to tourism demand, are focused on the offer side and in which the emphasized role of the state as a necessary subject in the development of rural tourism and its intervention can be seen, can also be found. It is important to note that there is a lack of studies dealing with comparative analysis of the development of rural tourism in different areas, which should undoubtedly be an inspiration to future authors of papers in this field.

A comparative analysis of Table 1 and Table 2 also indicates that most surveys (36%) in the first subperiod were conducted in Spain and Portugal, while China dominated as the host country of the survey (25%) in the second subperiod. This finding suggests the gradual shifting of the interests of researchers in the field of rural tourism from European countries to Asian countries. Finally, the first subperiod was dominated by three research methods: Partial least squares - structural equation modelling (PLS-SEM) technique, Case study and ANOVA and factor analyses with an individual share of 18% and cumulative of 55%, while Case study method doubled its participation in the second subperiod, PLS-SEM technique retained the same participation, and ANOVA and factor analyses were not applied in any research.

Results of evaluative bibliometric analysis

The papers on the topic of rural tourism described in the previous subtitle, selected by searching the WoS tourism journals, served as a sample for conducting an evaluative bibliometric analysis. In the first step, the journal distribution of the papers was proposed, to single out the most productive WoS tourism journals in the context of the research area (Table 3).

Table 3. The distribution of the papers across the journals

Journal	Number of the papers	2010-2014	2015-2019
Tourism Management	8	4	4
Journal of Sustainable Tourism	5	1	4
Annals of Tourism Research	4	2	2
Journal of Travel Research	2	1	1
International Journal of Hospitality Management	2	2	0
Scandinavian Journal of Hospitality and Tourism	2	0	2
Journal of Destination Marketing and Management	1	0	1
International Journal of Tourism Research	1	1	0
Journal of Travel and Tourism Marketing	1	0	1
Tourism Geographies	1	0	1
Total	*27*	*11*	*16*

Source: Author's research

The analysis determined the dominant share of the scientific journal *Tourism Management*, which participates in the total production of sampled papers with 30%. At the same time, a high degree of concentration of papers is evident, since 63% of the selected papers were published in only three journals: *Tourism Management, Journal*

of Sustainable Tourism and *Annals of Tourism Research*. It should be noted that the distribution of papers across two comparative periods is uniform in the case of *Tourism Management* and *Annals of Tourism Research*, while the *Journal of Sustainable Tourism* records significantly higher production of papers in the field of rural tourism in the last five years, which indicates to the potentially greater importance of this journal for the subject area in the coming period.

In the continuation of the bibliometric analysis, the analysis of keywords was conducted in order to determine the dominant topics and issues that occupy the attention of researchers (Table 4). A total of 170 keywords were singled out from individual papers, where only keywords that were repeated three or more times are shown in a table, and different words of the same meaning are recorded as a one.

Table 4. The most commonly used keywords within the sample

Keyword	Number of repetitions	2010-2014	2015-2019
rural tourism	19	8	11
(tourism) development	6	2	4
(tourist) satisfaction	5	3	2
(tourist) loyalty	5	3	2
residents' attitudes	5	2	3
community (tourism) benefits	5	2	3
PLS-SEM technique	4	1	3
destination image	4	2	2
social capital	3	2	1
experience economy	3	1	2
sustainable livelihoods	3	1	2
innovation	3	1	2
food specialties	3	0	3

Source: Author's research

Following the example of Dimitrovski et al. (2019), in addition to the table view, a word cloud was also prepared "in order to provide a visual representation of the most frequently cited keywords and most frequent topics within the analyzed papers" (p. 31) (Figure 1).

Figure 1. Word cloud of selected keywords

Source: Author's research

In addition to 'rural tourism' as expectedly the most common term, the previous table and graph show that issues of tourism development, tourist satisfaction and loyalty, attitudes and perceptions of the local population and community tourism benefits were the predominant research niches within the study area. Also, the authors paid significant attention to the image and promotion of the destination, the effects of social capital, experience economy, innovation and sustainable development. Among the keywords, the PLS-SEM technique stands out, which is along with the case study, the most frequently used research method. It is important to note that these research niches are almost equally represented in comparative subperiods, which speaks about the relatively steady interest of researchers and the need for a further and more dynamic development of scientific thought and intellectual structure of the subject area. The exception is the increased interest of researchers in culinary tourism (food tourism), based on local food specialities, which is evident in the second analyzed subperiod. It should be expected that, with an adequate marketing strategy, the specificity of local food will gain in importance as a factor of attracting tourists and therefore further production of papers on this topic can be expected.

After the acknowledgement of keywords analysis, a citation analysis was presented in Tables 5 and 6. The first part of the citation analysis was based on the distribution of Google Scholar and Scopus citations across the papers and aimed to identify the most impactful papers and authors that dominantly shape academic thought within the research area (Table 5).

Table 5. Papers distribution of Google Scholar and Scopus citations

Papers/Authors	Google Scholar citations			Scopus citations		
	Total	per author	per year	Total	per author	per year
Campón-Cerro, A. M., Hernández-Mogollón, J. M., & Alves, H. (2017)	109	36,33	36,33	41	13.67	13.67
Devesa, M., Laguna, M., & Palacios, A. (2010)	**560**	187,33	56	**222**	74	22.2
Frisvoll, S., Forbord, M., & Blekesaune, A. (2016)	73	24.33	18.25	43	14.33	10.75
Gao, J., & Wu, B. (2017)	138	69	46	71	35.5	23.67
Hjalager, A., Kwiatkowski, G., & Larsen, M. Ø. (2018)	51	17	25.5	33	11	16.5
Kastenholz, E., Carneiro, M. J., Marques, C. P., & Loureiro, S. M. C. (2018)	60	15	30	28	7	14
Lane, B., & Kastenholz, E. (2015)	172	86	34.4	77	38.5	15.4
Látková, P., & Vogt, C. A. (2012)	**490**	245	61.25	**224**	112	28
Loureiro, S. M. C., & Kastenholz, E. (2011)	336	168	37.33	158	79	17.56
Loureiro, S. M. C. (2014)	**355**	**355**	**59.17**	**181**	**181**	**30.17**
Martín, H. S., & Herrero, Á. (2012)	**491**	**245.5**	**61.38**	**242**	**121**	**30.25**
Mbaiwa, J. E. & Stronza, A. L. (2010)	236	118	23.6	114	57	11.4
Murray, A., & Kline, C. (2015)	137	68.5	27.4	65	32.5	13
Park, D.-B., Lee, K-W., Choi, H-S., & Yoon, Y.-S. (2012)	171	42.75	21.38	80	20	10
Park, D.-B., Nunkoo, R., & Yoon, Y.-S. (2015)	91	30.33	18.2	51	17	10.2
Phillips, W., Wolfe, K., Hodur, N., & Leistritz, F. L. (2013)	197	49.25	28.14	82	20.5	11.71
Rasoolimanesh, S. M., Roldan, J. L., Jaafar, M., & Ramayah, T. (2017a)	84	21	28	50	12.5	16.67
Rasoolimanesh, S. M., Ringle, C. M., Jaafar, M., & Ramayah, T. (2017b)	**185**	**46.25**	**61.67**	**103**	**25.75**	**34.33**
Rid, W., Ezeuduji, I. O., & Pröbstl-Haider, U. (2014)	190	63.33	31.67	81	27	13.5
Salvatore, R., Chiodo, E., & Fantini, A. (2018)	51	17	25.5	26	8.67	13
Sharpley, R., & Jepson, D. (2011)	431	215.5	47.89	154	77	17.11
Sidali, K., L., Kastenholz, E., & Bianchi, R. (2015)	230	76.67	46	97	32.33	19.4
Strzelecka, M., Boley, B. B., & Strzelecka, C. (2017)	50	16.67	16.67	36	12	12
Su, M. M., Wall, G., Wang, Y., & Jin, M. (2019)	47	11.75	47	30	7.5	30
Wang, L., & Yotsumoto, Y. (2019)	35	17.5	35	17	8.5	17
Xue, L., Kerstetter, D., & Hunt, C. (2017)	58	19.33	19.33	33	11	11
Zhao, W., Ritchie, J. R. B., & Echtner, C. M. (2011)	223	74.33	24.78	106	35.33	11.78

Source: Author's research

The largest number of Google Scholar and Scopus citations were made by Martín and Herrero (2012), Látková and Vogt (2012) and Devesa et al. (2010). However, as the number of citations per year is a more relevant indicator of the impact of papers (Dimitrovski et al., 2019), the papers of Rasoolimanesh et al. (2017b), Martín and Herrero (2012) and Loureiro (2014) have mostly contributed to the modelling of scientific thought, having in mind the year of publication of the paper. The mentioned papers achieved over 30 Scopus citations per year, which is a desirable result having in mind the demanding criteria for referring literature sources in this index base. When it comes to individual authors, the most profound impact in the analyzed area in the last decade, both in terms of the number of published authorial and co-authorial papers and the number of realized citations, was referred to Professor Sandra Maria Correia Loureiro from the University of Aveiro in Portugal.

In the second part of the citation analysis, based on the distribution of Google Scholar and Scopus citations across the journals, the most influential sources of literature within the researched tourism specialism were identified (Table 6).

Table 6. Journals distribution of Google Scholar and Scopus citations

Journal	Google Scholar citations		Scopus citations	
	Total	per paper	Total	per paper
Tourism Management	**1,817**	227.13	**846**	105.75
Journal of Sustainable Tourism	825	165	389	77.8
Annals of Tourism Research	763	190.75	319	79.75
Journal of Travel Research	574	287	274	137
International Journal of Hospitality Management	691	**345.5**	339	**169.5**
Scandinavian Journal of Hospitality and Tourism	124	62	76	38
Journal of Destination Marketing and Management	109	109	41	41
International Journal of Tourism Research	197	197	82	82
Journal of Travel and Tourism Marketing	60	60	28	28
Tourism Geographies	91	91	51	51

Source: Author's research

In line with the largest production of papers, the scientific journal *Tourism Management* also received the largest number of citations, which is not surprising considering the reputation and impact factor of this journal (IF 2019 = 7.432), which carries the epithet of the most influential journal in the field of tourism for years. However, it should be noted that the largest number of citations per paper was made by the *International Journal of Hospitality Management*, highlighting the enviable selection of papers by the journal review and editorial board.

Conclusions

The review of contemporary literature on rural tourism published in the most prestigious tourism journals in the world and the evaluative bibliometric analysis conducted pointed to the following conclusions:

- In the last decade, the interest of the academic community has been mostly established and focused on issues of tourist satisfaction and loyalty, attitudes and perceptions of the local population, as well as on the crucial role of the management structure in recognizing, respecting and fulfilling the wishes and needs of tourists;
- Relatively stable interests of the authors indicate the need for more dynamic development of academic thought and structure of the subject area, and culinary tourism based on local food specialities, comparative analyses of rural tourism development and research of the impact of social capital on the development of this tourism activity stand out as insufficiently researched areas and potential directions of future research;
- When it comes to the geographical areas in which the research was conducted, there is a noticeable shift of interest of researchers from European to Asian countries, led by China, while among the research methods the most used are Case study and PLS-SEM technique;
- Bibliographic units that have made the outstanding contribution to modelling academic thought within the research area in the past decade are Rasoolimanesh et al. (2017b), Martín and Herrero (2012) and Loureiro (2014);
- The most productive and most cited member of the academic community whose focus is the discipline of rural tourism is Professor Sandra Maria Correia Loureiro from the University of Aveiro in Portugal;
- Among the sources of literature, the scientific journal *Tourism Management* takes the first place in terms of the number of published papers and citations. In contrast, the *International Journal of Hospitality Management*, has gathered the largest number of citations per paper, can be attributed as the most promising journal in the context of influence.

The theoretical contribution of the paper is reflected in the fact that, according to the cognitions of the authors, it is the first research of its kind conducted in the field of rural tourism. Also, the paper provides insight into recent trends in rural tourism literature, relatively stable interests of authors, insufficiently researched areas and possible directions of future research, acting as a generator of changes and further development of the rural tourism area. On the other hand, the identified growing interest of members of the academic community in culinary tourism sends a message to rural tourist destinations and tourism service providers to direct marketing activities to promote local food specialities that play an increasingly important role in attracting modern tourists. The above mentioned reflects the practical repercussions of the paper and the

research realized in it. A fundamental limitation of the paper is the absence of relational bibliometric analysis and content analysis that would provide an even more in-depth insight into the researched issues. This limitation of a paper should serve as an idea for authors interested in future research in this area.

Conflict of interests

The authors declare no conflict of interest.

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INNOVATIVE FOOD PRODUCTS AS A BASIS FOR THE DEVELOPMENT OF RURAL TOURISM IN VOJVODINA

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ABSTRACT

The subject of the review article is the development of rural tourism based on innovative food products. The aim of this paper is to identify key forms of rural entrepreneurial tourism in Vojvodina. Gastronomy plays a significant role in presenting the culture and way of life of a certain area and reflects new trends in tourism-related to authenticity, sustainability, healthy lifestyle, and revival of tradition. The development of rural tourism should be based on efficient investment in the tourist offer through entrepreneurial projects that are in line with modern demand trends, including the production of food products that are gradually appearing on the market. Investing in the tourist offer in rural tourist destinations would affect the growth of income from rural tourism, and thus the economic development of rural areas and the state itself.

Introduction

The goal of the tourist industry is to make conditions to attract tourists and to meet their requirements. It is a very dynamic phenomenon that should constantly adapt to changes that are a result of the potential tourists' requirements (Williams, 2020; Zdravković & Peković, 2020).

The countries of the Western Balkans have become recognizable in Europe as a very suitable area for the development of rural tourism. The development of rural tourism is based on the interaction of food producers and the tourist offer of that geographical

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area, and food is one of the most important tourist offers. Tourist national products as strategic products and tourist consumption, which leads every country and its economy from poverty to the welfare world (Marković & Pidžo, 2020). The gastronomic offer is preconditioned for the development of rural tourism. Healthy national food is the driving force of health tourism. Interactivity between the tourism industry and agriculture, the food industry, as well as other industries and activities is a very important factor in the relationship with modern tourists.

Given the fact that Vojvodina is extremely rich in cereals and recognizable as the granary of Europe, this part of Serbia has very good potential for the development of rural tourism. The multiple importance of both social and economic and proper approach and understanding of rural development in the municipality has shown good results. In essence, the perspective of dealing with this type of tourism by the local self-government and rural hosts was determined on time, and the policy and importance of rural areas within the market economy system were determined (Banjac et al., 2016). An integrated approach to development implies a process on which decisions and perceptions of the social, spatial (including natural aspect), economic and technological aspects of development are based, but not as a simple set of knowledge, but as a means of optimizing relationships to preserve natural values. Modern trends in the world market require such spaces of original or minimally changed environment and our possibilities on the picky market can be destinations with undisturbed ambient units of rural areas, where rural settlements, traditional manifestations, and gastronomic specifics (Milićević et al., 2015). The reintegration of tourism on the world market and the reaffirmation of Serbia as a destination, as a priority task, imposes the need for more efficient incorporation of the ecological component into the tourist product, which wins a more favorable market position, greater competitiveness and profitability. However, the purpose of functional food will be that of sustainable agricultural development promotion (Sidali et al., 2015).

Rural tourism is a combination of many different aspects of the experience, sharing and presenting rural life. These rural experience can be defined in terms of rural activities and experiences found (Sharpley & Jepson, 2011). The combination of these forms is the essence of rural tourism. Analysis of rural tourism in Serbia shown in Table 1.

Table 1. Analysis of rural tourism in Serbia

STRENGHTS	WEAKNESSES
• Great natural potential for the development of rural tourism • The recognizable and preserved tradition of the Serbian people • The ecologically preserved area with natural resources	• Underdeveloped entrepreneurship and business in rural areas • Poor infrastructure • Lack of educated staff that would create modern directions for tourism development • Poor promotion by the locals • Poor employment
OPPORTUNITIES	**THREATS**
• Preservation of natural resources • Entrepreneurship development • Encouraging the return of the population to rural areas • Development of local tourism companies	• Consumer requirements are changing in line with new and modern trends • Strong competition in the domestic and foreign markets • Slower infrastructure development • Slower financial support for the development of agricultural goods and services

Source: Maksimović et al., 2015

There are still no precise data on the number of tourists interested in rural tourism, but the assumptions of world tourism organizations show that 75% of the world's population shows interest in nature vacations.

Tourists are interested in:

active vacation in a natural and ecologically preserved area

traditional, cultural, and historical values of the place where they have a rest

accommodation adapted to their requirements, different styles, basically wood as a material and facilities adapted for rest and recreation (Maksimović et al., 2015).

The importance of nutrition has changed significantly in modern society. Consumer demands when it comes to food products have been increasing in the last ten years.

Natural landscapes mountains, rivers, tradition, culture and a healthy lifestyle are just some of the requirements of tourists for their stay in a rural area. Local food is an unavoidable segment of the tourist offer, which is why more and more attention is paid to the improvement of local gastronomy. The gastronomic offer is the basis for attracting tourists, with the idea to respond to the demands of tourists, to follow modern trends, and to remain authentic and unique (Grigorova et al., 2015).

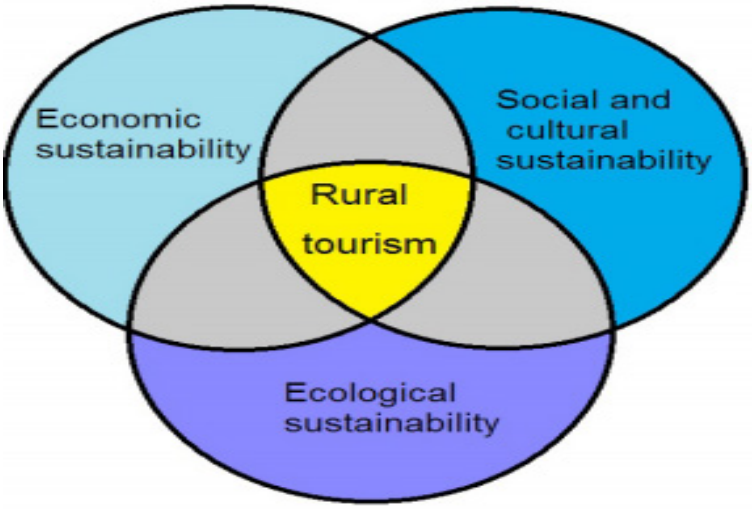
On this basis, food tourism is a rapidly growing sector and rural areas can use it as a Therefore, the development of tourism in rural areas conditions the development of the

food industry and gastronomic offer, which together represent a means of economic diversification. In this way, an opportunity is created to create new food products that will contribute to the marketing and economic security of rural areas (Hall, et. al., 2004).

In recent years, significant developments in research in food science are more focused on the fabrication of different new food products based on the beneficial effect on the human organism. Novel food products are important because of their quality, nutritional value, because of applying modern technologies to obtaining potential new food products. Functional food or food with added value with special plant ingredients presently serves as a systematic paradigm. This evolution is focused on improving human health and also providing protection from various diseases (Molina et al., 2012). With the advent of the coronavirus, people have become more focused on living in rural areas, the traditional way of food production, and the development of rural tourism. In this way, a new era and a turn in the interests of modern society begins. Functional food utilizes technologies and policies for inclusive development, presenting a high range of nutritional and health benefits. It is good for the planet, the consumer, the farmer, and is environmentally sustainable. Functional foods in its composition include berry fruits and medicinal plants, cereals as well as all foods that can be eaten as staples. Diversifying these staples can lead to a drastic reduction in malnutrition and the maximization of overall benefits (Fanelli, 2020).

Smallholder agricultural production plays a major role in food and nutrition security in many developing countries. The very vision of sustainable rural tourism is a balance of economic sustainability, social and cultural sustainability and environmental sustainability, as shown in Figure 1.

Figure 1. The vision of sustainable rural tourism



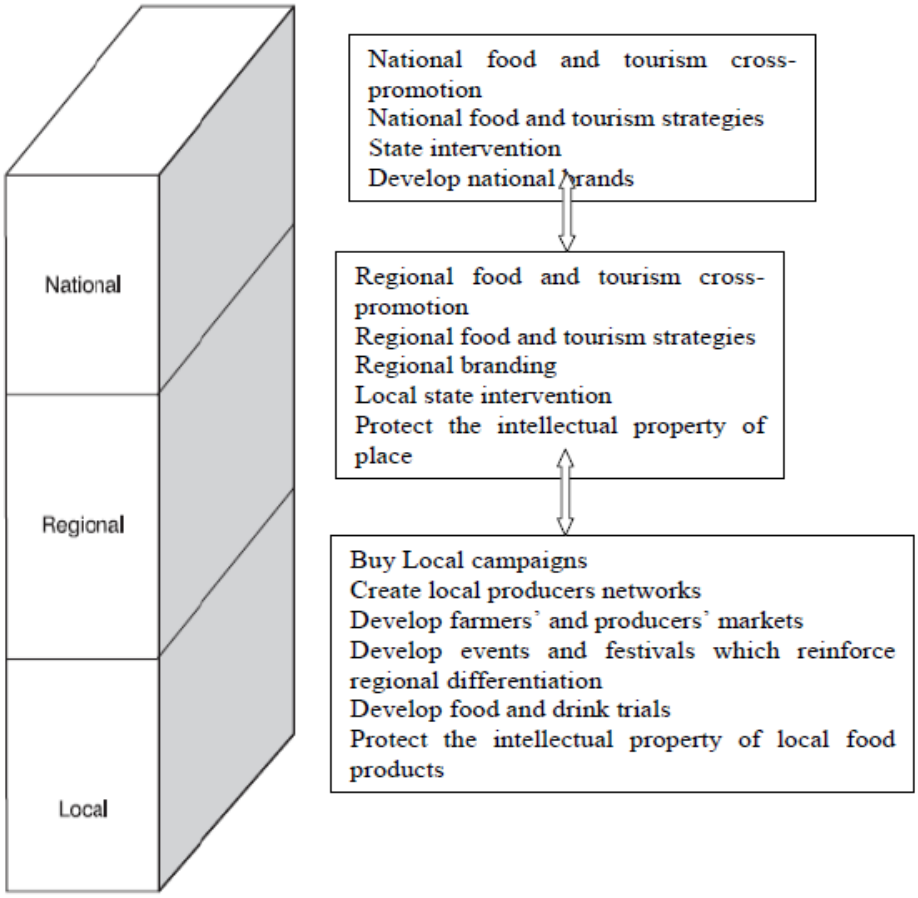
Source: Maksimović et al., 2015

An increase in the consumption of fruits and vegetables is associated with a decrease in the incidence of cardiovascular disease and reduced risks of certain cancers. It is important to bear in mind that not all vegetables have the same composition and antioxidant capacity (Dey et al., 2016). It is therefore important to recognize which vegetables have the highest antioxidant capacity and introduce them regularly into the diet (Pereira et al., 2016).

Vojvodina is famous for its rich diversity in terms of traditions, culture, history, art, and food. The rich culture and traditions of Vojvodina are reflected in its cuisine that encompasses a wide range of delicacies enriching the palate with a plethora of aroma and taste (Dragićević et al., 2012). The food is different in terms of taste, variety, and style of cooking; be it south, central east, or west Serbia, each part has its own distinct quality, yet woven together with the common thread of spices and mouth-watering flavors. The difficult terrain acts as a fortress safeguarding the state's culture and traditions from external influences, and one can still witness the prevalence of age-old traditions in the rural pockets of the state during its fairs, festivals, and social ceremonies (Tanwar et al., 2018). The promotion of 'valorization' of culinary heritage encourages independent and collective initiatives and is seen as a process by which local action and appropriation cater for the development of rural tourism. The term novel food refers to food that is not part of the traditional eating habits of European citizens (Sharma et al., 2018). Novel food products are foods with different characteristics in various respects and, in this context, they are a contrast to traditional food. These foods are an expression of integration of the different food cultures, so novel food is an innovative food or food produced using new technologies and new production processes. It follows that novel foods are innovative products that require a different production process from the standard EU one or derived from the application of innovative bio technologies (Garau, 2015). Innovation is undoubtedly a starting point for economic progress and development. In some studies, it has been shown that the new technology investments have brought high productivity rates and rapid, positive economic growth, by demonstrating a significant effect on economic growth (Dubé et al., 2014).

Villages in Serbia are places to engage in various forms of alternative tourism that include sports activities in nature, culinary, ecological, wine, cultural tourism. The existence of alternative forms of tourism is of great importance for attracting tourists because their requirements can be fully realized through a stay in rural areas. Relationship between national, regional and local food, tourism and regional development was shown on Figure 2.

Figure 2. Relationship between national, regional and local food, tourism and regional development



Source: Hall, et al., 2005

A key prerequisite for the development of rural tourism is the authentic character of the products. Therefore rural and food tourism have their basis for networking.

Innovative food products

Fruit juices

The greater presence of plant fruits in the human diet has influenced the beverage industry to favor the production of functional products, especially juices, as fresh beverages. Fruit juices are rich in nutritional components and have no allergens. This type of juice represents a taste profile that is considered pleasant for all age groups, perceived as a healthy and refreshing drink, and consumed regularly. Some natural juices have high acidity, can naturally contain microbial growth inhibitors, and can be added to food products (colors and flavors). The aroma of fresh juice is due to the

complex composition of volatile compounds, as well as the presence of polyphenolic components (Zanini et al., 2016).

The content of compounds that give a characteristic odor to juices varies depending on maturity, as well as the applied fruit processing techniques.

The smell of freshly squeezed juice is noticeably different from heat-treated juices because during processing there is a loss of aromatic compounds or unpleasant odors during heating and storage of products, which adversely affects the placement of juice because consumer expectations are not met.

That is why some producers have encouraged the production of freshly squeezed juices without additives, sugar, water and claim that they contain more nutritional components and that they can be stored longer than the juices obtained in juicers. This claim is based on the fact that in centrifugal juicers, fruit fruits are crushed with a metal blade and the use of centrifugal force, as a result of which the juice extract is separated from the fruit flesh (pulp). The metal blade rotates at high speed, during which heat develops which negatively affects the content of bioactive components in the juice. In contrast, traditionally freshly squeezed juices are obtained by manual crushing of the fruit and pressing of the crushed fruit from which the juice is released. During manual squeezing of juice, no heat is released and the nutritional composition of the juice is preserved, which justifies the market price of hand-squeezed juices, which is higher than the price of conventional ones (Ozen and Singh, 2020).

The influence of temperature and time period of juice storage are important parameters related to the quality of this product. In a study conducted by Khaksar et al. (2019) it was determined that freshly squeezed juices that are not pasteurized and in which there are no additives are stable at a temperature of 4 ° C for 5 days, ie that they do not lose their nutritional value.

Economic analyzes indicate increased industrial production of fruit juices, including the possibility of using wild plants that are widespread and easily available. The untouched rural areas of the Balkan countries are rich in this phytochemically valuable plant species, whose biopotential is discussed throughout the history of human civilization. In order to obtain new products that could meet the expectations of a functional product and meet the standards of rural tourism, most often resort to domestic production of berry juices specific to a particular region, such as chokeberry, blueberry, strawberry, blackberry, raspberry, and others berry fruits (Vicentini et al., 2016).

Fruit wines

The term wine mainly refers to grape wine, however, different cultures in the world use other raw materials in the process of wine production. The history of fruit wines is not as long and prestigious as the history of grape wines. Research dedicated to fruit wines is taking an increasing position in scientific studies, in the form of commercial opportunities and health benefits that fruit wines have (Rupasinghe et al., 2017). Fruit

wines are obtained according to the technological procedure used to obtain wine from grapes in the process of alcoholic fermentation of fruit juice (Figure 2.9) (McKay et al., 2015). Any type of berry can be used as a raw material for fruit wines (Thilakarathna & Rupsasinghe, 2013). During wine production, it is possible to apply various treatments, such as heat treatment due to the more efficient isolation of cellular ingredients. The influence of temperature increases the content of the liquid phase and makes it easier to isolate the compounds that give the wine its characteristic color (Sokolowsky et al., 2015). However, the temperature also leads to the degradation of thermolabile components, through a series of reactions it accelerates the formation of aromatic complexes that give the wine "smell and taste when cooked".

There are fruit wines from crops on the market that are mainly grown in plantations (blueberries, blackberries, raspberries, strawberries, and other berries), while wine from some types of wild crops is still not recognized and available as a commercial product. Wine tourism gives hope for survival and investment in rural areas. The impact of wine and wine components on human health has been known since ancient times, and the benefits of fruit wines are presented below.

The chemical composition of fruit wines is complex and the main ingredients are water, alcohol, sugars, organic acids, minerals, but also polyphenolic compounds, higher alcohols, esters, and other components (Johnson and Gonzalez de Mejia, 2012). Volatile and non-volatile acids, esters, higher alcohols, aldehydes, and ketones greatly contribute to the final sensory character of the product.

The amount of alcohol as one of the main ingredients in wine depends on the applied technology in wine production and usually ranges between 5 and 15%. The degree of ripeness of the fruit affects the sugar content, which also refers to the level of alcohol. If the fruit is not of the appropriate degree of ripeness, it is necessary to add sugar during fermentation, which can define the final sweetness of the wine. The amount of ethanol is important for the stability and sensory properties of the wine. During fermentation, the increase in alcohol content significantly limits the growth of yeast. Also, the presence of alcohol is important from the aspect of discussing the bioavailability of wine ingredients with potential health benefits. In addition to ethanol, methanol is also present in fruit wines, which is toxic to humans. Based on legal regulations, the content of methanol in commercial red wines must not exceed 300 mg/L (Official Gazette of RS No. 26/2015).

The sugar content is important for the growth and metabolism of yeasts because wine yeasts get most of their metabolic energy from the catabolism of glucose and fructose (Jackson, 2008). The main disadvantage of fruit wines is the lower sugar content, compared to grape wine. The dominant sugars in berries are glucose and fructose, with different contents depending on the plant species to which they belong (Milivojević et al., 2011; Mikulic-Petkovsek et al., 2012). The total sugar content in berries is slightly lower than the sugar content in grapes, which is why it is desirable to add water during the production of berry wine. The added water reduces the acidity of the berry stalk, but adversely affects the sensory characteristics of the wine.

The composition of organic acids in berry wine comes from their content in fruits. The most common organic acids that are present in berries are citric, malic, vinegar, tartaric, and fumaric, and their content varies depending on the type and stage of fruit ripeness (Milivojevic et al., 2012). The presence of organic acids in fruit wines is also affected by yeast because yeast produces them during fermentation (Duarte et al., 2010). The content of volatile acids, specifically acetic acid, must be maintained at a minimum level because their presence in a concentration above 1.2 g/L could develop an unwanted aroma (Swiegers & Pretorius, 2005).

Wine also contains a significant amount of minerals in easily accessible forms, especially K and Fe, which classifies wine as an important food product. K is the dominant mineral in fruit wines, followed by Ca, S, P, and Mg and small amounts of Na. Excessive consumption of wine, due to the presence of alcohol, can disrupt the intake of Ca, Mg, Se, and Zn and increase the excretion of Zn by the kidneys (Rupasinghe & Clegg, 2007). Excessive alcohol intake negatively affects the absorption, metabolism, and excretion, due to which there is a disturbance of the homeostasis of microelements that are necessary for the proper development of biochemical processes in the body.

All these benefits provided by berries and medicinal plant raw materials that grow in rural areas of Vojvodina represent an exceptional natural potential for the development of rural tourism. The production of mother juices and fruit wines could be the first step towards better development of this type of tourism because gastronomic products of traditional producers that are slowly appearing on the market are increasingly attracting the attention of tourists.

Also, it is important to note that in this case, too, the economic aspect is extremely important, because investing in production provides the development of areas that have been largely forgotten by modern society (Gunasekaran et al., 2004).

Application of modern and traditional technologies for obtaining new products in order to develop rural tourism

Basic engineering concepts related to culinary processes, especially to heat transfer mechanisms, which are represented in the food industry. It is assumed that a lot of knowledge from process engineering could be applied in gastronomy in order to improve product quality by applying innovative technologies (Trystam, 2013).

Solid-liquid extraction is a technological process used in the food industry in order to isolate bioactive molecules from certain food ingredients (Tzia & Liakadis, 2003). In addition to isolating food ingredients, extractions could be used to obtain plant-based extracts used in gastronomy with the aim of improving the taste and quality of food. The isolation of aromatic molecules from plants, their purification, and their addition to already existing products affect the improvement of sensory and functional characteristics of traditional products. In addition to extraction, centrifugation is also a technological process used in cooking, which indicates that multidisciplinary is the starting point for the development of new quality products (This, 2014).

Lyophilization is also a technological drying process that involves removing water from the material being dried. The lyophilization process is also known as dehydration and takes place in a vacuum with strict control of critical temperature and pressure parameters. By applying this drying technology in the food industry, high-quality food is obtained, with low water content, and a preserved aroma and authentic taste. Lyophilized products have the ability to rehydrate, and can be consumed as dried products with a very fine and preserved texture (King, 1971). This modern drying process is a very complex technology that requires the engagement of engineers, food technologists who will regulate the process to ensure the production of quality products competitive on the market (Peñarrieta et al., 2012). Obtaining products with low water content in the food industry has initiated the commercialization of lyophilization, so it is also used to create products intended for astronauts (Loss & Bouzari, 2016; Valentina et al., 2016). In addition, lyophilization is also used to make confectionery products such as ice cream, creams, and chocolates (Carvalho et al., 2017). The application of technological processes of extraction and lyophilization in gastronomy is of great importance for the creation of new products. The development of rural tourism can best take place through multidisciplinarity, ie by connecting gastronomy, technology, medicine, and economy. By changing people's consciousness, attitudes towards villages are also changing, not only in Serbia but also in European countries, which brings rural tourism into the focus of interest of potential investors.

Conclusions

The natural potential and wealth of Vojvodina are the starting point for investments and development of rural tourism. Active vacation, religious tourism, wine tourism, local culture, traditional customs, and gastronomic offer make the rural area recognizable and attractive to visit. Greater emphasis on the gastronomic offer implies the use of traditional natural raw materials for obtaining new food products. The development of gastronomy and tourism is directly related to the health of the population and the country's economy, which is what modern society strives for. Governments and ministries are not directly involved in rural development, their discourses often take a strategic direction at the local level. However, the government's desire to work on popularizing rural areas and attracting potential investors leads to the sustainable development of local government projects related to the ecological environment. However, their initiatives can influence the final decisions of investors regarding the practical application of rural development.

Conflict of interests

The authors declare no conflict of interest.

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ECONOMIC INDICATORS OF GOAT BREEDING ON FAMILY HOLDINGS IN THE REPUBLIC OF SERBIA

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A B S T R A C T

The subject of research in this paper is the analysis of economic indicators of goat breeding. Based on the data of the FAO and SORS statistical databases, the situation in the goat sector in the world, Europe, the EU and the Republic of Serbia was examined. Based on the set goal of the research, important questions were answered, such as: What amount of profit can he expect from goat breeding? Is such production economically justified and for how long can the financial investments be returned and at what rate of accumulation? Based on the inputs and outputs of Alpine and Balkan goat breeding (farm 2) in Serbia, more important economic indicators have been determined. The average profit ranges from 9,783 € (farm 1) to 18,208 € (farm 2), and the invested capital can be returned in the first or second year of goat breeding. At 100 € of invested capital, from 55.27 € to 102.85 € of accumulation is achieved, which depends on the breed of goats. Goat breeding is economically justified for breeders and provides significant financial security and economic sustainability of the holding.

Introduction

In developed countries, livestock production has a dominant share in total agricultural production, so it is also an indicator of the quality of the overall condition of the primary food sector. In the same countries, products of animal origin dominate the diet of the population, which leads to the conclusion that the consumption of animal products, with the growth of standards, is growing both quantitatively and in terms of value (Sehested et al., 2000).

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Breeding of ruminants is based on the maximum use of grazing, and in accordance with the available pasture areas at different times of the year. Small cattle, small ruminants, are mainly reared according to known methods on pastures in areas where the position of the terrain is unfavorable for intensive agricultural production (Pavličević et al., 2000). They play a key role in landscapes and biodiversity conservation. Opportunities to improve the sheep and goat sector may also stem from the need to conserve natural resources. Goats are suitable for breeding on areas less accessible to other species of animals, and also as users of by-products of the field and processing industry - straw and other crop residues.

Goats graze and browse weeds and other different plants, clean and fertilize the areas under plant cultures, encouraging the growth of desirable vegetation. This way of cleaning surfaces has already given significant results in some regions (Australia and New Zealand) and countries (Greece and Spain). It has proven to be very effective, cheap and environmentally friendly, in contrast to significantly more expensive and environmentally harmful, mechanical and chemical surface cleaners (Kitsopanidis, 2000).

The connection between farming and goat breeding is reflected in the fact that goats produce significant amounts of high quality manure during the winter, without which it is difficult to achieve higher yields in farming. This is important in today's conditions of disturbed ecosystem, when the important task of any development program is to preserve the environment (Stojanović et. al, 2004). In such ecological conditions, more biologically valuable food is produced.

Combined grazing is a form of pasture exploitation in which several types of livestock are combined. Most often they are cattle and sheep or goats, where the utilization rate of pastures increases by 35% compared to grazing only cattle (Ocokoljić et al., 1983; Coffey et al., 2001). Meat production increases in combined grazing of sheep or goats with cattle by 24% in relation to grazing only in cattle, and by 9% in relation to grazing only in sheep or goats (Wells et al., 2000).

Production systems in the Republic of Serbia in sheep and goat breeding are not largely differentiated and it can be said that there are generally two systems in both branches. In sheep breeding, these are small farms for the production of lambs with the use of grazing and without it, and in goat breeding, a system of small farms for the production of milk and kids with the use of grazing without it. Based on the examination of the milk traits of Balkan goats in semi-extensive breeding conditions, it can be concluded that these traits contain enough phenotypic variability for the selection to be successfully performed on them (Bogdanović et al., 2008).

The advantages of goat breeding in relation to other branches of animal husbandry are reflected in: lower level of initial investments, large areas of unused pastures, nutritional advantages of goat milk, lower intensity of work operations, etc. The size of the herd depends on the production goal, the breeding system (extensive, semi-intensive and intensive), the breed and the availability of agricultural land, as well as on the fact whether it is the basic or additional activity of the household. In combined production, meat - milk

- cheese, the number of breeding heads may be slightly lower. In our country, experts often recommend the production of meat and milk, which is based on the existing racial structure, but with significant improvements in all segments of goat breeding. The commitment to goat breeding and profitability of production depends on numerous factors, which include the availability of food, the required land area, animal housing facilities, market availability, the price of raw materials and products on the market, supply, demand, etc. An important factor for the success of goat production is the facilities, as well as their equipment. It all depends on the breeding system and the racial composition of the goats. About 1.5 m2 of barn floor area should be provided for goats, while about 2.5–3.0 m2 of barn floor area should be provided for goats / rams (Radivojević, 2013).

One of the most important factors on which the profitability of goat production depends is the possibility of providing sufficient quantities of bulky and concentrated food. In our climatic conditions, corn silage or grass-clover silage is most often used for feeding goats. The amount of silage in the daily meal for goats ranges from 2-4 kg, and pregnant goats are given in the amount of 1-2 kg (Mirić et al., 1996).

Profit in goat production largely depends on the direction of production and racial composition of goats. The largest part of the income from goat farms is realized through the sale of milk or dairy products. Therefore, the income mostly depends on the milk yield of goats that are raised and the price of milk on the market. Apart from milk and dairy products, a significant income is from the sale of kids, whether they are fattening or breeding heads. Therefore, the subject of this research is the profitability of goat breeding. The aim of the research in this paper is to find answers to some important questions, such as: What amount of profit can he expect from goat breeding? Is such production, for the producer, economically justified? For what period of time can the investments in a goat farm be returned and at what rate of accumulation?

Materials and Methods

The available production capacities and investments for the adaptation of the facilities and the procurement of the breeding herd and the necessary equipment for the farm on the farm were determined on the basis of data obtained from goat breeders in our practice. Data from the database of the Republic Statistical Office of Serbia were used for the research (SORS, 2020) namely: Statistical Yearbooks, publication - Census of Agriculture in Serbia 2012, etc. Then, data from the statistical database of the Food and Agriculture Organization of the United Nations were used (FAO, 2020). Also, professional literature was used for certain natural inputs, care and protection of animals during breeding on the family farm. Statistical and calculative methods were used to process the collected data. The economic justification of goat breeding was determined using statistical methods for investment evaluation: return on capital, accumulation rate, average net profit and economy. Based on different criteria, assessments of the economic justification of goat breeding on the family holding are given.

Results and Discussions

Goat milk and meat production in the world, Europe and the EU - Goat milk production in the world, from over one billion head of goats, amounts to about 18.6 million tons, of which 15.14% in Europe (2.8 million tons). There are over 15 million dairy goats in the EU. In the total production of goat milk in the EU in the amount of 2.2 million tons, the largest share belongs to Greece (26.16%), followed by France (27.45%), followed by Spain (22.85%) and the Netherlands (11.47%), and the other members together have a share of 12.07% (Table 1).

Table 1. Dairy goat population and milk production in the main countries in the Evropen Union, in the Evrope and in the World

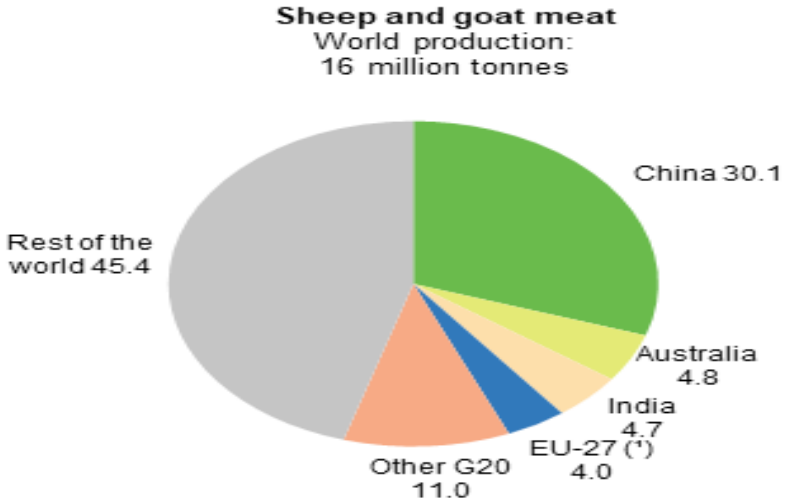
Country / Continent	Population		Milk production	
	No. of head	Share (%)	Tonnes	Share (%)
Greece	6,300,000	41.56	562,491	26.16
Spain	3,059,731	20.19	491,374	22.85
Rumania	1,483,100	9.78	-	-
France	1,223,816	8.07	590,000	27.45
Holland	532,870	3.52	246,562	11.47
Other countries	2,558,204	16.88	259,612	12.07
European Union-27	15,157,721	100.00	2,150,039	100.00
Europe	19,290,067	18.65	2,824,715	15.14
World	1,034,406,504	100.00	18,656,727	100.00

Source: Author's calculation according to the data FAOSTAT, Live animals and livestock processed stats, 2020, http://www.fao.org/faostat/en/

The world produces about 16 million tons of sheep and goat meat (Figure 1), of which in the European Union-27, about 4 million tons (25%) are produced, and the leading countries are Greece, France, Spain and the Netherlands, as well as after milk production (Eurostat, 2020). The sheep and goat sector in the EU is very diverse in terms of herd size, breed and production volume (Ruiz et al, 2019).

Meat is the main product of the sheep and goat sector, but other products also have a special economic significance and bring significant income, primarily in areas where milk, cheese, wool or leather products are produced by traditional methods. Some of these products have quality labels that increase their economic potential. As small as it is, goat meat production plays an important role in the UK and Ireland, where sheep meat accounts for almost 8% and 6% of total meat production, respectively.

Figure 1. Word production of sheep and goat meat, 2018



Source: FAOSTAT, http://www.fao.org/faostat/en/

In Greece, the value of sheep and goat meat production represents almost half of the total value of livestock production. According to research, sheep and goat farming in Greece is threatened by a number of problems such as underdeveloped infrastructure, insufficient training to modernize production and increasing the degree of commercialization of products (Kitsopanidis, 2002).

Characteristics of goat breeding in the Republic of Serbia - In the Republic of Serbia, goat breeding takes place on 8% of agricultural farms (45.7 thousand), and the total number of goats is 218.4 thousand. The number of goats has been declining since 2008 with an average decline of 8.7 thousand per year. About 30% of goats are in the region of Serbia - south, while 30% are in the region of Serbia - north. The region of Šumadija and Western Serbia and the Region of Southern and Eastern Serbia have approximately the same number of goats, with 60% of the total number of heads. The average size of a herd of goats in Serbia in the northern part is 5.4 heads and 4.5 heads in the southern part. In both parts of Serbia, farms with a herd of up to 9 heads are the most represented. Territorially, most of the sheep's and goat's milk is produced in the Region of Eastern and Southern Serbia, followed by the Region of Šumadija and Western Serbia. The value of goat's milk and head for slaughter is only 0.7% of the total value of livestock production. In the total milk production in Serbia, cow's milk makes 96.84%, then goat's milk 2.20, and a smaller share makes sheep's milk, 0.96% (SORS, 2020).

Unlike all other branches of animal husbandry, goats in Serbia are mostly raised on agricultural farms, with a standard output size of less than 2,000 Euros. This category of farms (86%) with a standard output of less than 8,000 Euros is the most numerous and they raise the largest number of goats (76%). On medium-sized farms (12%), 18% of goats are raised, and on large farms (2%) the remaining 6% are raised.

Economic justification of goat breeding - The profitability of goat production depends on many factors and problems that growers face. This primarily refers to the available facilities and their adaptation, then the choice of methods and systems of goat breeding, the direction of production, as well as the possibility of selling goat products - milk, kids, manure, etc. When deciding to raise goats, it is important to consider the possibility of providing a sufficient amount of food throughout the production year. Based on that, the number of goats that need to be bred is determined.

A very important issue is the size of the stock with which the production is planned to start. The accommodation and feeding capacities on the farm influents to whether a larger number of goats will start immediately or that number will increase from year to year. If the breeder does not have much experience in raising goats, production should start with a smaller number of heads, with a tendency to increase the size of the stock from year to year. An important factor on which the success of goat breeding depends is the facilities, spatial and microclimatic conditions of keeping and accommodation. Goat stable should be built according to the technical and technological requirements and needs of certain categories of goats. In addition to the shed itself, it is very often necessary to build silo facilities, hay canopies and other necessary ancillary facilities on the farm. The amount of investment in the facilities will, above all, depend on the number of goats on the farm, as well as on whether it is planned to expand the production capacity in the coming period. If an existing facility is being renovated, efforts must be made to comply with all norms provided for goatherds regarding the welfare of goats.

According to the data on existing farms in practice (farm 1 - alpine goat; farm 2 - Balkan goat), input-output parameters for economic analysis were determined and investments in fixed and working capital for farms of 80 goats were estimated in the amount of 17,700 € and to: stable facilities - goat barn and other ancillary facilities (for renovation) in the amount of 4,200 €; milking equipment, machinery, etc .: in the amount of 5,700 €; investments in the breeding herd 6,400 € and working capital in the amount of 1,400 €. For the stable-pasture system of breeding, the production of 500 liters of milk is planned, 1.7 kids per year per goat. Goats are sold when they reach a body weight of 15 kg, and for breeding they are included with 35 kg.

Both the production itself and the accuracy of financial results in the calculation are influenced by numerous factors, so it is more realistic to make a calculation and financial analysis of goat production for each individual farm, than to apply a general one in which average values are taken for the most important parameters. The parameters for the analysis of farms in this research should be taken only as a guide, because the included prices are very susceptible to variation from year to year.

A rough estimate of the profitability of goat milk and meat production was made on the basis of head productivity in average breeding conditions. Quality grass mass meets protein needs, but the problem of meeting energy needs remains. In addition to bulky nutrients, goats should be given concentrated nutrients. The most commonly used are corn, oats, barley, wheat, heat-treated soybeans, beans, peas, bran, fodder flour,

soybeans and sunflower cakes. Appropriate mixtures of concentrated nutrients can be used in the diet of certain categories of goats.

Food and nutrition are the most important items of economics of goat breeding. The goat's meal should be sufficient in all phases of the reproductive cycle, both in terms of quantity and quality. Table 2 shows the different models of daily meals for goats.

Table 2. Meal models for daily feeding of goats per head *

Type of nutrients (kg/day)	Meal per head		
	Model 1	Model 2	Model 3
Red clover + grass (pasture)	-	2.5	-
Corn silage	2.5	-	-
Meadow hay	1.5	-	-
Alfalfa hay in bloom	-	0.8	1.5
Silage of beans + oats	-	-	1.8
Corn, grain	0.3	0.6	0.6
Potatoes, steamed	-	-	0.7
Sunflower cake	0.3	-	-
Bran, wheat	-	0.5	-
Fodder salt	0.015	0.015	0.015
Nutrient content in the meal:			
Dry matter (kg)	2.5	2.3	2.5
NEL (MJ)	14.53	14.2	14.2
Digestible proteins (g)	223.5	233.0	232.0
Calcium (g)	16.0	17.0	23.3
Phosphorus-total (g)	10.6	11.0	8.0

*The body weight of the throat is 60 kg; production per head 3 kg of milk with 3.5% milk fat; NEL - net energy in lactation; MJ - mega Julie

Source: According to the norms of Obračević et al., 1990

The study analyzed two farms that differ in goat breeds. Farm 1 raises an alpine goat or a French alpine goat. This is a breed of domestic goat, which originates from the French Alps. The average weight of a female is 60-80 kg, and a goat 80-100 kg. The milk yield of goats of this breed is 500-800 liters during one the lactation whose lasts about 280 days. She is extremely appreciated for her milk yield. Domestic Balkan goat is bred on farm 2. This is a typical example of primitive races with less productive traits. It is most widespread in the hilly and mountainous areas of our country. Their average weight is 34-40 kg. She is fertile from the age of 2. Usually 1-2 kids goats. Lactation lasts 7-8 months. It is very resistant to low temperatures. The species is endangered and it is estimated that there are less than 1,000 heads in Serbia.

On the basis of average racial values for fertility, milk production and fertilizers in the barn, in Table 3, the average income and costs for farms of 80 heads each, for alpine and Balkan goats, were determined by a calculation procedure.

Table 3. Gross income from goat breeding on the farm, 80 heads

(Eura)

Economic indicators		Farm 1 - Alpine Goat	Farm 2 - Balkan Goat
I	**Revenues** (without incentives)*	**26.150**	**16.420**
	Milk	16,800	9,400
	Goatling	7,875	6,030
	Excreted heads (goats)	1,475	990
	Manure **	-	-
II	**Production costs**	**8,110**	**6,750**
	Food	7,090	5,960
	Workers' work	450	340
	Veterinary services	340	270
	Other expenses	230	180
III	Gross profit **(I-II)**	**18,040**	**9,670**

* In the Republic of Serbia in 2020, incentives for goats amount to 7,000 RSD per head

** Manure is used to fertilize the area on the farm

Note: The calculation is made on the example of a herd intended for meat and milk production

The most important product in dairy breeds of goats is milk. Its production is conditioned by the production-racial type of goats, then by feeding, keeping and exploiting animals. Another important place has meat. Its quantities depend on the intensity and length of fattening kids. Dairy goats produce good quality goat meat. In third place comes manure of good quality.

Goat's milk is used as a dietary food in a smaller part in the fresh state, and a larger part is used for cheese production. For 8 kg of mature-hard cheese, about 8 liters of goat's milk are needed, and for soft cheese, about 6.5-7 liters. Course of lactation and milk production have their specifics and they depend on: the order and length of lactation, daily milk production and its durability, the period of drying and nutrition of goats. Favorable prices of milk, goat meat, dried goat meat, the possibility of processing goat meat into quality durable cured meat products, as well as incentives from the state, are increasingly attracting the attention of goat breeders in the Republic of Serbia.

On the basis of economic parameters determined by the calculation procedure for one production cycle of hair keeping (Table 3), cash flows for the five-year period of goat farms of the stated breeds of 80 heads were projected and selected economic indicators were determined on their basis (Table 4).

Table 4. Cash flows from goat breeding on the holding, 80 head

R. no.	Economic indicators	Amounts per years (€)				
		1st year	2nd year	3rd year	4th year	5th year
Farm 1 - Alpine Goat						
1.	Total revenue	26,150	26,750	26,550	26,850	26,680
2.	Total expenses	8,110	8,350	8,750	7,980	7,850
3.	Gross profit	18,040	18,400	17,800	18,870	18,830
4.	Income tax	180	184	178	189	188
5.	Net profit	17,860	18,216	17,622	18,681	18,642
Farm 2 - Balkan Goat						
1.	Total revenue	16,420	16,850	16,980	16,760	16,390
2.	Total expenses	6,750	6,650	6,490	6,390	6,830
3.	Gross profit	9,670	10,200	10,490	10,370	9,560
4.	Income tax	967	102	105	104	96
5.	Net profit	8,703	10,098	10,385	10,266	9,464

Source: Author's calculation according to goat breeding data on holdings

For the purpose of obtaining an assessment of the economic justification of the mentioned goat farms, static methods were applied. During the analysis, data from 2019 of production were taken as representative economic parameters. The final amounts of economic indicators determined by calculation procedures are given in the final amount in Table 5.

Table 5. Indicators of economic justification of goat breeding on the holding, 80 heads

Economic indicators	Unit of measure	Farm 1 - Alpine Goat	Farm 2 - Balkan Goat
Average net profit	€	18,208	9,783
Coefficient of economy	-	3.24	2.52
Accumulation rate	%	102.85	55.27
Return on investment time	years	0.97	1.81

Source: Author's calculation based on results for a five-year period of goat breeding

Based on the established indicators, it can be concluded that by breeding alpine goats (farm 1); the coefficient of economy is 3.24. According to the required criteria, the coefficient is higher than one, so from this aspect the production is economical, i.e. economically justified for the breeder. The average net profit is 18,208 € and since it is positive and significantly above zero, production is economically efficient. The accumulation rate is 102.85% and is far above the limit, for which in this case it is taken as 20% which confirms that the production is economically justified. The investment of the amount of money can be returned in the first year of goat breeding and the period is significantly shorter than the analyzed economic period, i.e. of five years, so even according to this criterion, production is economically acceptable.

On farm 2, of the Balkan goat breed, the coefficient of economy is 2.52 and is higher than one, which means that the production is economical. The average net profit is €

9,783 and is significantly above zero, which means that production is economically justified. The net profit from farm 2 is significantly less than the net profit farm 1, i.e. 9,783 Euro less than 18,208 Euro.

Based on the obtained accumulation rate of 55.27%, it can be seen that at 100 Euros of invested capital in production, about 55 euro of accumulation are achieved. Since the accumulation rate is far higher than the marginal accumulation rate, i.e. of 20%, production is acceptable. The obtained result shows that the capital invested in goat breeding can be returned in the second year of the production cycle. Considering that the determined period of 1.81 years is shorter than the economic limit, i.e. of five years, means that according to this criterion, the breeding of Balkan goats for the producer is economically justified. Based on the analysis, both of the goat farms achieve significant economic benefits, but the economic results from farm 1 (Alpine goat) are more favorable than farm 2 (Balkan goat).

Extensive production systems and general conditions provide the possibility of production of these primary products with environmental values. The profitability of production must be found in the placement on the market with ecological and autochthonous products. Therefore, it is necessary to "enrich" the produced milk by processing it into an attractive dairy product with a geographical origin, which could achieve about 30% higher price on the market compared to related foods.

Conclusions

Goat milk production in the world, from over one billion head of goats, amounts to about 18.6 million tons, of which 15.14% in Europe (2.8 million tons). There are over 15 million dairy goats in the EU. In the total production of goat milk in the EU in the amount of 2.2 million tons, the largest share belongs to Greece (26.16%), followed by France (27.45%), followed by Spain (22.85%) and the Netherlands (11.47 %), and other members of the group participate with 12.07%. The world produces about 16 million tons of meat from sheep and goats, of which in the European Union-27, about 4 million tons (25%) are produced, and the leading countries are Greece, France, Spain and the Netherlands, as well as by production milk. The sheep and goat sector in the EU is very diverse in terms of herd size, breed and production volume. In the Republic of Serbia, goat breeding takes place on 8% of agricultural farms (45.7 thousand), and the total number of goats is 218.4 thousand. The number of goats has been declining since 2008 with an average decline of 8.7 thousand per year. The average size of a herd of goats in Serbia in the northern part is 5.4 heads and 4.5 heads in the southern part. Territorially, most of the sheep's and goat's milk is produced in the Region of Eastern and Southern Serbia, followed by the Region of Šumadija and Western Serbia. The value of goat's milk and head for slaughter is only 0.7% of the total value of livestock production. In the total milk production in Serbia, cow's milk makes 96.84%, then goat's milk 2.20, and a smaller share makes sheep's milk, 0.96%.

Goats in Serbia are mostly bred on agricultural farms, with a standard output size of less than 2,000 Euros. This category of farms (86%) with a standard output of less than 8,000 Euros is the most numerous and they raise the largest number of goats (76%). According

to the established economic indicators of alpine goat breeding (farm 1), the coefficient of economy is 3.24, and for Balkan goat breeding, it is 2.52 (farm 2). The net profit of farm 2 is significantly less than the net profit of farm 1, i.e. 9,783 euro less than 18,208 euro. At 100 Euros of invested capital 102.85 € of accumulation from farm 1 and 55.27 € from farm 2 are achieved. The invested capital in goat breeding can be returned in the first year of alpine goat breeding and in the second year by breeding Balkan goats. Based on the analysis, both of the goat farms achieve significant economic benefits.

Goat breeding on family farms is suitable for integration with other productions on the farm and they are suitable for breeding by organic production methods. The basic incentives from the budget of the Republic of Serbia amount to 7,000 RSD per head of goat, and in organic production they are much higher, in the amount of 28,000 RSD per head of goat, which makes it a chance for breeders. By investing in capacities for finishing and processing of products obtained from goat breeding, the development of other activities is encouraged, and thus the small economy in the area. In addition to the numerous economic and environmental effects achieved by goat breeding, this production also has social significance and provides an opportunity for economic sustainability of family farms in rural areas.

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Conflict of interests

The authors declare no conflict of interest.

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UNITED NATIONS' SUSTAINABLE DEVELOPMENT GOALS REVIEW – DUAL ANALYSIS OF ROMANIA AND DENMARK

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ABSTRACT

The present paper aims to highlight the discrepancies between two countries of the European Union, Romania and Denmark, in the perspective of the Sustainable Development Goals. As Denmark is seen as a primer European and Global nation in achieving the United Nations' targets, Romania can use this example as a guideline on how to act and to obtain the most notable results. The article proposes some key principles that Romanians could follow in order to successfully fulfill the 2030 Action Plan having, as an example, the strategies and indicators reached by Denmark. The current work paper is structured as a review of the two reports that voluntarily summarize the situation of the Sustainable Development Goals in each state, followed by a statistical analysis of investment behavior and concluded with an analysis of the most notable differences between the states based on the dataset published by Eurostat.

Introduction

The concept of sustainability recalls human efforts in building a future that is comprehensive and optimistic for the planet and its people.

Sustainability came to light as a peripheral of business ethics, as an answer to general displeasure of the virtually permanent damage caused by a continuous focus on immediate profits.

In 2000, 189 countries agreed on a plan for the new millennia, they planned to end extreme poverty in all its forms, together with other ambitious and necessary visions and therefore, a list of several goals was created, Millennium Development Goals, counting in total 8 goals that aspired to eradicate extreme hunger, to improve maternal health, to achieve universal primary education, to combat diseases, to promote gender equality and to empower women, to ensure environmental stability, to reduce child mortality and to develop global partnership for improvement (U.N., 2015). These goals

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were to be reached in 15 years. With the help of several global organizations, notable progresses have been registered but efforts still had to be made, so that in September 2015, a new set of goals had been agreed, to help finish the work that was started in year 2000, the new goals were called the Sustainable Development Goals (SDG-s) that formulate the plan up to the year 2030 (U.N., 2020). In today's technological society, it is known more on how to balance the three pillars of sustainable development, consisting in social progress, economic growth and environmental protection.

Year 2015 stands as a beacon of hope in our way to achieve a prosperous and sustainable world where everyone can have a productive, vibrant and peaceful life in a healthy environment through the introduction of the 17 Sustainable Development Goals. All the new Goals are unparalleled since they recall global input, regardless of economic, social or political status. The goals come to encourage expansion and growth without harming the planet, this is why the leaders identified the need of a hand-in-hand strategy for the quest of ending poverty with the ability of building economic prosperity addressing the classical social needs of health, social responsibility, labor and education whilst undertaking the most urgent need of our world (climate change and environment protection).

Since the inception of the 2030 United Nations' (UN) Agenda for Sustainable Development, mankind has decided to further focus on quintessential aspects for a sustainable world. In the foreseen future of the next fifteen years, with the seventeen goals, UN's Agenda will assemble the world's efforts to put an end to poverty and inequalities and to deal with climate change making certain that not a single community is marooned.

As this paper will make a comparison of the Danish and Romanian strategies in accordance with the Sustainable Development Goals of the United Nations' Agenda 2030, it can be identified that Denmark is a primer nation according to the SDG Index Report (Sachs, Shmidt-Traub, Kroll, Lafortune, & Fuller, 2019). What does Romania misses? Where is Denmark exceeding in? What Romanians must do to catch up or at least follow the Danes? Those are the questions that this article aims to give answers to.

According to the Sustainable Development Report (Sachs, Shmidt-Traub, Kroll, Lafortune, & Fuller, 2019), Denmark together with all the Nordic countries top up the SDG Index. Challenges have been faced even by Denmark implementation process of the SDG-s. Not a single country is progressing on the path of achieving all the 17 goals. Important gaps on the following SDG-s have been registered even for Denmark: SDG 12 (Responsible Consumption and Production); SDG 13 (Climate Action); SDG 14 (Life Below Water) and SDG 15 (Life on Land).

On the one hand, Romania's Voluntary National Review would be revised (Ministry of Environment, 2019), a key document for this article, that was completed under the guidance of the Ministry of Environment with its Inter-Ministerial Committee assisted by other governmental institutions and representatives of civil society and academic area. SDG-s management is in the attributes of the Ministry of Foreign Affairs as main coordinator and the respective ministry for each goal; and Romania's mission to

enclose the Agenda in nation's core strategy represents an inter-institutional cooperation effort. In 2017, local governmental bodies with their Sub-Committee for Sustainable Development assumed the responsibility of the 2030 Agenda's implementation at a national level. The National Voluntary Review is mainly focusing on 6 SDG-s (SDG 6 – Clean Water and Sanitation; SDG 7 – Affordable and Clean Energy; SDG 11 – Sustainable Cities and Communities; SGD 12 – Responsible Consumption and Production; SDG 15 – Life on Land; SDG 17 – Partnerships for the Goals). The document has as a foreword the chapter "Leave no one behind" that summarizes the recent GDP growth for Romania 4.8% in 2016, 6.9% in 2017 and 4% in 2018 (World Bank, 2020); the Review also tackles the demographic decline of current times (a yearly decrease of population of an average of 0.56% over years from 2007 through 2018 and a decrease of 2.5% in 2018 compared to 2013). This classical structure of the report based on the targets set up by the UN is a poor method of presenting the strengths of a nation, that is why Denmark's model has been chosen as to complete the comparative analysis.

On the other hand, Denmark's Review (Ministry of Finance, 2019), for the initial part presents a national commitment defining the necessity of SDG-s incorporation into the national legislation. The SDG-s act as protagonists on the domestic landscape and all the highlighted points in this report, are a guidance for global development moving forward to year 2030, as Denmark being a primer country in the 2019 SDG Index Report, on account of its governmental delivery. In Denmark, the Ministry responsible for the SDG-s coordination is the Foreign Affairs' and the Finance one. The governmental plan to turn SDG-s into tangible and actionable items is entitled "The Action Plan" and is centered around 5 main topics, the same "P"-s as the ones in the Agenda 2030. For each individual "P" of Denmark, excluding "Partnership", the government formulated several targets (in total 37 of them) that come to merge some of the SDG-s, each of the target above has multiple national indicators which can be quantifiable and measurable, highlighting the fact that the SDG-s formulated by the UN do not solely represent a strategy, proof that each nation needs to adapt and translate the universal guide to its needs and specifications.

Materials and methods

The following lines represent the review of the reports presented as a dual analysis of the SDG Voluntary Reviews, shown in Table A1, as a presentation enforced by indices that are not linked to the Eurostat's SDG-s dedicated analyses, showing the following: Denmark's status according to what has been published in its National Voluntary Review (first column); in the next column it is presented the Romania's status on the respective SDG in the similar document; the last column focuses on what Romania could do in order to progress in achieving the respective SGD.

The SDG-s represent a multitude of assortments that investors can opt to use in order to flavor this delightful journey towards a better world. Looking into the historical data and past decisions, the work of all of SDG-s' stakeholders is to lead to an improved

understanding on defining an idealistic investment strategy. The SDG-s also represent 17 guidelines for the investors to take into consideration, while the evolution of the progress, at this point of time, can be properly recorded grace to the SDG reporting framework (PricewaterhouseCoopers, 2017).

The present paper aims to emphasize the importance of SDG improvement; a regression model will be used in analyzing both Danish and Romanian progress in this journey, by looking at the GDP (Gross Domestic Product) evolution, as suggested in the specialized literature (Cruceanu, Anghel, & Diaconu, 2016; Glass & Newig, 2019). Subsequently, a separate analysis on each SDG will be conducted to obtain additional detailed results.

The main data source for this study is Eurostat; in order to perform the comparison between the two countries, all indicators were converted in euro/capita. The correlation of the indices to the respective SDG can be seen in Table A2. Next, both models will be addressed, and the datasets will be analyzed with the EViews 11 Student Version software.

The dependent variable is represented by the GDP of the respective country while the independent variables are as follows, for each individual state: Business Research Expenditure, Governmental Environmental Expenditure, Governmental Education Expenditure, Governmental Research and Development Expenditure, Governmental Agricultural Research and Development Expenditure, Governmental Health Expenditure, Governmental Social Protection Expenditure and Total Investment, the selected time interval being from 2000 to 2018.

The results highlight the importance of sound investment strategy that thrives economic boom together with SDG-s implementation improvement using econometric modeling. Additional statistical methods, based on official data, will be used to complete the policy and paper reviews, as a base for the final conclusions.

In the datasets for both countries, shown in Table A3 & A4, can be observed that Denmark recorded an ascending trend over the years for the GDP index but at a slower pace, situation matching the general SDG-s improvement, situation similar for Romania. For the econometric model to have validity, the datasets will be subjected to multiple tests as described in the following section.

Results & Discussions

Descriptive statistics and econometric models

The first series of tests, presenting the descriptive statistics and the normalization distribution of the series – as shown in Table 1, relate that all the indices present a normalized structure, the distribution recorded normal values for all indices, Kurtosis recorded values lesser than 3, representing a platykurtic distribution; assuming a normal distribution for the indicator, the following hypotheses have been formulated H0: representing a normal distribution with the respective probability higher than 5%; H1: representing an abnormal distribution for the opposite probability; in this case, looking at the table, H0 is confirmed for all of the indices.

Table 1. Normalization of the database – Denmark & Romania

Denmark / Romania	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	Prob. >5%? (Y/N)
GDP DK	44,635	44,400	48,260	42,190	1,768	0	2	Y
GDP RO	6,127	6,350	8,740	4,010	1,404	0	2	Y
Business Research Exp. DK	816	835	941	616	98	(0)	2	Y
Business Research Exp. RO	13	11	26	8	5	2	5	Y
Gov. Environment Exp. DK	220	222	297	173	39	0	2	Y
Gov. Environment Exp. RO	36	39	73	5	22	0	2	Y
Gov. Education Exp. DK	3,569	3,555	3,795	3,197	157	(0)	3	Y
Gov. Education Exp. RO	210	216	289	115	52	9	2	Y
Gov. R&D Exp. DK	51	37	118	25	29	1	3	Y
Gov. R&D Exp. RO	10	11	16	3	4	(1)	2	Y
Gov. Agricultural R&D Support DK	82	79	99	69	9	0	2	Y
Gov. Agricultural R&D Support RO	1	1	3	0	1	1	3	Y
Gov. Health Exp. DK	3,541	3,716	4,006	2,827	397	(1)	2	Y
Gov. Health Exp. RO	242	247	411	153	72	1	3	Y
Gov. Social Protection Exp. DK	10,333	10,502	10,927	9,408	484	(0)	2	Y
Gov. Social Protection Exp. RO	696	777	1,014	417	201	(0)	2	Y
Total investment DK	9,247	9,029	10,864	7,939	918	1	2	Y
Total investment RO	1,548	1,675	2,510	767	462	(0)	3	Y

Source: EVIEWS 11 SV – Author's calculation

In order to test the individual stationarity, the datasets were assessed to evaluate the unit root existence and it was calculated that data was not stationary and following the statistical process, the first difference was needed to be implemented causing all the variables to modify, the descriptive statistics being tested again. The process of differentiating represents the reduction of the database with one year due to the variance across the years and consists in the stabilization of the series removing the seasonality and trend. Summarized, in Table 2, it can be observed what variables remained normalized after the respective operation and the following hypotheses have been considered H0: where data is stationary and does not have a unit root for the probability lesser than 5% and the absolute value of t-Stat being above the critical value in the 1, 5 and 10% moments and H1: where data is not stationary and has a unit root for the opposite probability and critical value, including in the test's equation the trend, intercept, none or both at the same time as observable in the table. The probability presented values below 5% for all variables with two exceptions for Romania and considering that the t-statistical was above the critical value, H0 could be confirmed. The probability for the group testing is 0% for both Levin, Lin & Chu and ADF & PP – Fisher Chi-square tests, indicating the stationarity of the data and the absence of the unit reconfirming that the variables can continue the statistical process.

Table 2. Normalization re-testing & Stationarity testing – Denmark & Romania

		Unit Root Test | Augmented Dickey-Fuller				
Denmark / Romania	Normalized?	Intercept / Trend	t-Stat > critical 1%?	t-Stat > critical 5%?	t-Stat > critical 10%?	Prob.
GDP DK	No	N/A	Yes	Yes	Yes	1%
GDP RO	Yes	Intercept	No	Yes	Yes	8%
Business Research Exp. DK	Yes	N/A	Yes	Yes	Yes	1%
Business Research Exp. RO	Yes	N/A	No	Yes	Yes	2%
Gov. Environment Exp. DK	Yes	N/A	Yes	Yes	Yes	<1%
Gov. Environment Exp. RO	Yes	N/A	Yes	Yes	Yes	<1%
Gov. Education Exp. DK	Yes	N/A	Yes	Yes	Yes	<1%
Gov. Education Exp. RO	Yes	N/A	No	Yes	Yes	3%
Gov. R&D Exp. DK	No	N/A	Yes	Yes	Yes	<1%
Gov. R&D Exp. RO	Yes	N/A	Yes	Yes	Yes	<1%

		Unit Root Test | Augmented Dickey-Fuller				
Denmark / Romania	Normalized?	Intercept / Trend	t-Stat > critical 1%?	t-Stat > critical 5%?	t-Stat > critical 10%?	Prob.
Gov. Agricultural R&D Support DK	Yes	N/A	Yes	Yes	Yes	<1%
Gov. Agricultural R&D Support RO	Yes	N/A	Yes	Yes	Yes	<1%
Gov. Health Exp. DK	Yes	Intercept	Yes	Yes	Yes	<1%
Gov. Health Exp. RO	Yes	N/A	No	No	No	13%
Gov. Social Protection Exp. DK	No	N/A	No	Yes	Yes	1%
Gov. Social Protection Exp. RO	Yes	N/A	No	No	No	10%
Total investment DK	No	N/A	No	Yes	Yes	3%
Total investment RO	No	N/A	Yes	Yes	Yes	<1%

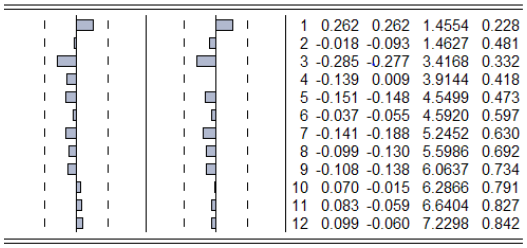
Source: EVIEWS 11 SV – Author's calculation

Using the correlogram analysis, shown in Table 3, the variables fit between the autocorrelation dotted lines, meaning that the seasonality of the series was not registered validating that the variables are statistically representative.

Table 3. Correlogram – Denmark & Romania

Denmark

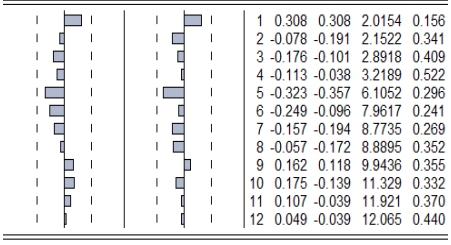
Date: 03/30/20 Time: 13:30
Sample (adjusted): 2001 2018
Included observations: 18 after adjustments



	AC	PAC	Q-Stat	Prob
1	0.262	0.262	1.4554	0.228
2	-0.018	-0.093	1.4627	0.481
3	-0.285	-0.277	3.4168	0.332
4	-0.139	0.009	3.9144	0.418
5	-0.151	-0.148	4.5499	0.473
6	-0.037	-0.055	4.5920	0.597
7	-0.141	-0.188	5.2452	0.630
8	-0.099	-0.130	5.5986	0.692
9	-0.108	-0.138	6.0637	0.734
10	0.070	-0.015	6.2866	0.791
11	0.083	-0.059	6.6404	0.827
12	0.099	-0.060	7.2298	0.842

Romania

Date: 03/12/20 Time: 17:46
Sample (adjusted): 2001 2018
Included observations: 18 after adjustments



	AC	PAC	Q-Stat	Prob
1	0.308	0.308	2.0154	0.156
2	-0.078	-0.191	2.1522	0.341
3	-0.176	-0.101	2.8918	0.409
4	-0.113	-0.038	3.2189	0.522
5	-0.323	-0.357	6.1052	0.296
6	-0.249	-0.096	7.9617	0.241
7	-0.157	-0.194	8.7735	0.269
8	-0.057	-0.172	8.8895	0.352
9	0.162	0.118	9.9436	0.355
10	0.175	-0.139	11.329	0.332
11	0.107	-0.039	11.921	0.370
12	0.049	-0.039	12.065	0.440

Source: EVIEWS 11 SV – Author's calculation

Covariance analysis of the GDP indicator can be observed in Table 4, where the probability registered a value above 5% for most of the variables but for the following differentiated indices for Denmark: Gov. Social Protection Exp. (Social) and Total investment (Inv) displaying a strong relationship between the GDP of Denmark and the last two indices, while the others show a percentage of the probability above 10% representing their independence from the GDP indicator. In the Romanian case, the probability registered a value above 5% for most of the variables except Gov. Education Exp. (Educ), Gov. R&D Exp. (GovR&D) and Total investment (Inv), the low percentage of the probability displays a strong relationship between the GDP of Romania and the respective indices, while Gov. Environment Exp. (Env) and Gov. Agricultural R&D Support (AgriR&D) show a percentage of the probability above 40% representing independence from the GDP indicator.

Table 4. Covariance analysis – Denmark & Romania

Denmark / Romania	GDP	Env	Educ	Buss	AgriR&D	GovR&D	Health	Social	Inv
DK GDP	NA	12%	84%	32%	89%	36%	12%	<1%	<1%
RO GDP	NA	75%	<1%	32%	46%	1%	5%	16%	<1%

Source: EVIEWS 11 SV – Author's calculation

The linear model for Denmark represents an equation, using the least squares method where the probability for the F-statistic test registered a value of 0.00217 which is below the 0.05 statistically accepted threshold and it correlates with the great impact of the exogenous variables over the endogenous ones. The R-squared value of the model is 0.8822 representing an increased capacity of the independent variables to explain the GDP of Denmark. The equation can be noticed at Equation 1 and the coefficients can be noticed in Table 5 for both countries showing what is required in order to have a 1 differenced euro/capita increase in the GDP of Denmark. For Romania, the probability for the F-statistic test registered a value of 0.00206 which is below 0.05 reconfirming the great impact of the exogenous variables over the endogenously one. The R-squared value of the model is 0.8837 representing an increased capacity of the independent variables to explain the GDP. In the same table can be observed what is required in order to have a 1 differenced euro/capita increase in the GDP of Romania.

Table 5. Coefficients of the Danish and Romanian model

Index	*Coefficients - Denmark*	*Coefficients - Romania*
GDP	N/A	N/A
Business Research Exp.	(4.7)	12.7
Gov. Environment Exp.	0.2	(5.2)
Gov. Education Exp.	0.4	4.2
Gov. R&D Exp.	(15.3)	45.2
Gov. Agricultural R&D Support	12.9	(77.2)
Gov. Health Exp.	(2.2)	4.3
Gov. Social Protection Exp.	0.5	0.9
Total investment	1.4	0.3
Constant	327.5	103.2

Source: EVIEWS 11 SV – Author's calculation

Equation 1. GDP model equation for Denmark and Romania

$$GDP = C1 \times Bus.Res.Exp + C2 \times Gov.Env.Exp. + C3 \times Gov.Educ.Exp. + C4 \times Gov.R\&DExp. + C5 \times Gov.Agri.R\&D + C6 \times Gov.HealthExp. + C7 \times Gov.Soc.Prot.Exp. + C8 \times TotalInv. + C$$

Next, the database will be investigated to get the homoscedastic diagnosis using White's heteroskedasticity test; the probability for this test records a value above the 5% statistically accepted margin for all of the indices, Denmark recorded for F(8,9) 20.99% and for Chi-Square 20.36%. Another test that further analyses the residual correlation of the database is the LM Breusch-Godfrey that registered for the current dataset a statistically probability of 99.8% that strongly confirms the validity of the model. In Romanian's case, the probability for F(8,9) is 81.93% and Chi-Square is 68.69%. The residual correlation of the database verified with LM Breusch-Godfrey test, registered for Romania, a value of 96% confirming once again the validity of the model.

With all the multiple tests presented above it can be confirmed that for both Denmark and Romania, the multiple sector investment influence the GDP of the country and represents an accurate indicator for the socioeconomic level. The strong existing correlation further indicates the need of public and private investment to increase the general SDG-s improvement.

Sustainable Development Goals – a comparative analysis

How is the EU answering to the SDG-s in general? The European institutions have assessed that sustainable development is a core objective in the general policy, aspect fastened in the European Treaties and highlighted in key projects, policies and frameworks. The Agenda with its 17 Goals is the culmination of global efforts to achieve sustainable development.

Eurostat, in this case, is the governmental body in charge to regularly oversee improvement of the SDG-s in the EU and for this specific aspiration, the EU bodies created a set of a indicators to closely monitor the EU Member States progress.

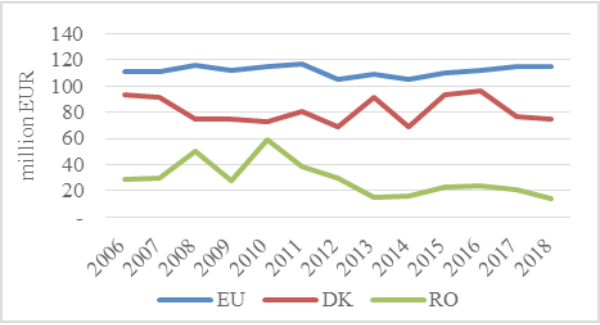
GOAL 1: No Poverty

The first subject touched by the SDG guideline is the poverty and the aspiration of ending it in all its forms, all over the planet. The data shown in the previous part of the paper suggests how unacceptable it is from an EU Member State as Romania to have such high discrepancies, both when compared to the primer position and to the average of the Member States (as it could be observed in the following analyses). Even though the decreasing trend is a sign of improvement throughout all the indices, local government needs to focus its efforts into improving the life quality of Romanians. The disparity is caused mainly because of the unbalanced rural life where, as shown earlier, not even the sewerage and fresh water supply reach the entirety of the population. The essence of this SDG should not only be identified with the economic situation, that was shown to be precarious, but should also highlight the conditions and solutions for poverty diminishment.

GOAL 2: Zero Hunger

The situation presented in Figure 1 where the agricultural research field can reveal the importance of the research, can be said that Romania is not offering enough credit to research in any field as the country is having a real agricultural potential that could be fully achieved with a proper funding in this area. The most important year for Romania where the largest funding recorded peak values was 2010, with almost EUR 60 million while Denmark registered values above this maximum of Romania throughout the whole period, with the largest value in 2006 EUR 93.89 million. The most alarming fact is that the numbers are going down, opposing to the ascending trend of both EU average and Denmark.

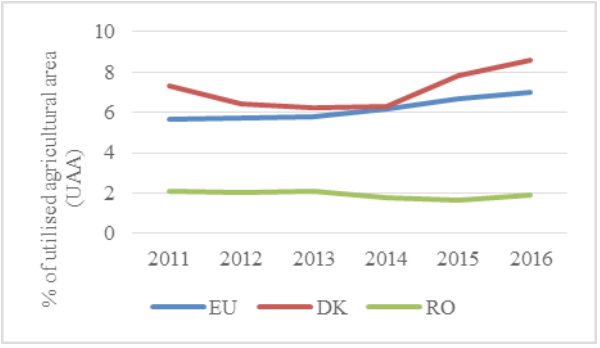
Figure 1. Government support to agricultural research and development (SDG 2)



Source: Eurostat

Organic farming as presented in Figure 2 should represent a priority for Romania, as it matches the developing profile of the country's agriculture and the small average farm area, Romania recorded a descending trend over the years as opposed to the ascending trend in both EU and Denmark. Aspects, if properly advised, could increase the percentage of organic farms in this traditionally agricultural oriented member state of Romania, and could provide better opportunities through higher added value crops. The increasing trend of the EU average shows a growing interest for organic farming across Europe, with huge potential for countries like Romania to obtain increasing support.

Figure 2. Area under organic farming (SDG2)



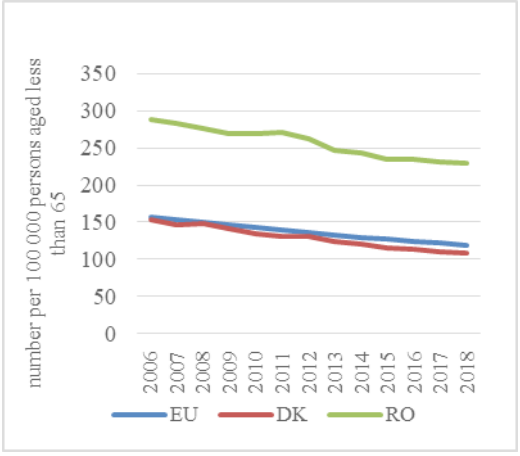
Source: Eurostat

The next objective is to confine the hunger, to supply the population with enough food that fits the nutritional needs of each individual and to do so in a sustainable way. Even though Romania is known for the numerous small farmers, it is not a focus point in the Voluntary National Review as Denmark is doing for its small-scale farmers. Methods to encourage the cooperation between farmers in order to increase the agricultural output, together with smart investment, could improve the agricultural situation in Romania. It is a shame that agriculture is not a top research topic, but the immense potential of Romanian agriculture, should not be altered by other technological industrial niches and should coexist in a prosperous economy. Even though Romania, together with all the EU Member States, don't focus around national hunger, they are focusing on achieving the food security and what is foreseen to happen in the future, situation that might cause some large disturbances, due to the negligence over the nutritional security, especially in Romania where not enough lobby is made, and that the national food security could be in danger if the agriculture is not sustainable treated through clever crop management.

GOAL 3: Good Health and Well-being

The death rate index alone, as observed in Figure 3, can't reveal the true situation of Romania, but it can highlight the fact that the health-care system does not benefit at its maximum of how it should be when compared to both EU average and Denmark. The most important thing is that even for Romania it can be observed a decrease in the trend over the last 10 years. The variance for Romania over the years is around negative 20% while the improvement for Denmark reaches 29%, this meaning that in absolute values, Denmark recorded a more significant decrease over the years.

Figure 3. Death rate due to chronic diseases (SDG3)



Source: Eurostat

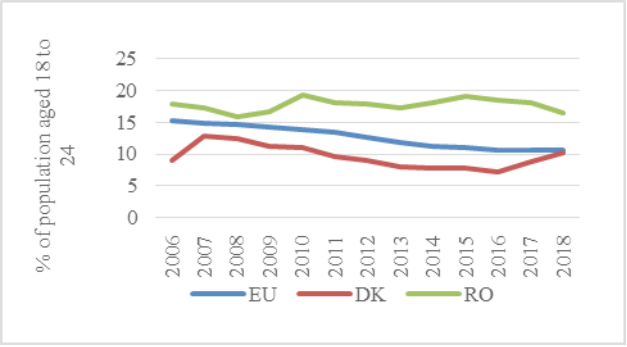
The focus on ensuring a healthy life and promote the comfort for all ages should be attractive for each nation and additionally, each state should adapt this SDG on its specificities, an interesting aspect of this SDG is the fact that Romania's National

Review has a more complex analysis of the health situation than what is presented in the Eurostat database, meaning that the disease-tracking is of high importance. Denmark's health situation looks a little better, but it is an absolute must to point out the dreadful state of public hospitals and the insufficient treatment points in Romania.

GOAL 4: Quality Education

Figure 4 is highlighting that in the last 3 years Romania has registered a decrease of early leavers from education, whereas Denmark recorded a slight increase and therefore, Romanian authorities should make a real effort into further decreasing the numbers to meet the European average. Romania recorded the lowest percentage of early leavers from training and education in 2008 with 15.9% while Denmark recorded its lowest in 2016 with 7.2%. Denmark is a leading example and both Romania and the EU Member States should follow the Danish model in education where both investment and research are key objectives for the general wellbeing.

Figure 4. Early leavers from education and training (SDG4)



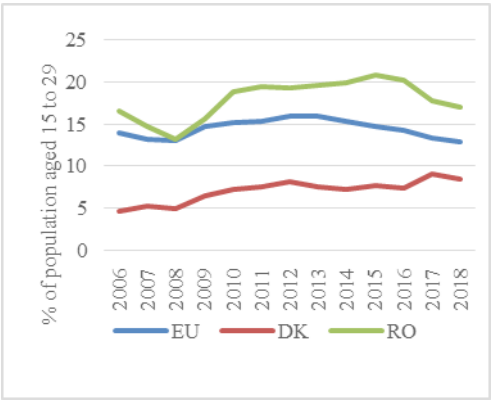
Source: Eurostat

According to what has been analyzed from both the National Review and the Eurostat database, Romanian efforts are not significant when compared to Denmark, where a greater GDP percentage is allocated for education and children are taught with top end technologies and up to date information. Meanwhile, Denmark succeeded in defining a minimum of learning that will assure each child's success in the current labor market. The Eurostat indices, unfortunately, place Romania lower than both Denmark and the EU average, a worrying trend that should be immediately reversed.

GOAL 5: Gender Equality

The situation presented in Figure 5, is a real problem in Romania due to the large percentage of the population that is not willing to either work or train. It is a terrifying situation knowing that for all variables the situation got worse over the years, of course Denmark registered lesser young people unemployed or involved in education, but even in this case, an ascending trend can be noticed over the years. This situation should be changed with a proper organizational movement that demands the unemployed to get trained and then to automatically be inserted in the labor market.

Figure 5. Young people neither in employment nor in education and training (SDG5)



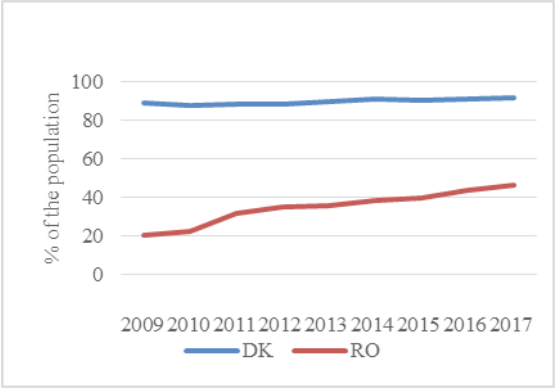
Source: Eurostat

Gender equality and women empowerment, a subject where Romania is overcoming the counterparts, it was also highlighted previously that on average women earn more than men, but the monthly income can't be compared to Denmark which is around 6 times higher. Notably is also the case signaled in the Danish National Review where efforts are made to eliminate violence.

GOAL 6: Clean Water and Sanitation

The position presented in Figure 6 is, unfortunately, the representation of rural Romania and the consequence of poor provincial management, situation mostly caused by political instability. While Denmark has more than 88% of the population connected to wastewater treatment, Romania still struggles to secure for 50% of its population the basic wastewater connection. Situation that needs urgent act, even though in 2017 connections increased by 136% over 2009.

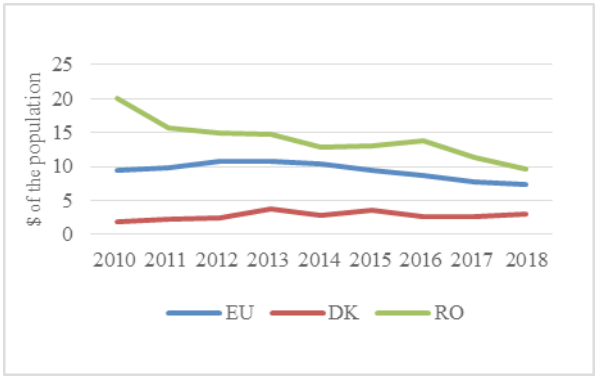
Figure 6. Population connected to at least secondary wastewater treatment (SDG6)



Source: Eurostat

The illustration at Figure 7 is again representing rural Romania, where a significant part of the population is unable to meet their heating necessities. The decreasing trend over the years is signaling good conditions for Romania while Denmark recorded a small increase over the last years. In Romania, the lowest percentage was recorded in 2018 with around 10% of the population being unable to maintain their homes adequately warm, while Denmark recorded its lowest in 2010 with 1.5% of the population. Will be an impressive improvement for Romania if the EU average could be overtaken.

Figure 7. Population unable to keep home adequately warm (SDG6)



Source: Eurostat

While Denmark clearly overcame this aspect in entirety, Romania still struggles to supply its population with fresh water and sanitation access. The numbers have grown in the last couple of years but still, a continuous effort should be made to allow the entirety of the population to have access to essential services.

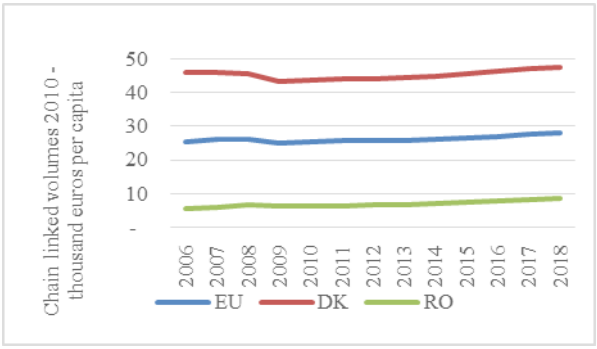
GOAL 7: Affordable and Clean Energy

The seventh goal relates to modern and reliable energy supply for everyone, Romania is clearly recording some issue in this aspect, whilst Denmark is increasingly focusing on clean energy and managed to frame a clear investment plan for sustainable energy. What should be highlighted is that Romania, a country with such significant resource possibility should not rely that much from energy imports and could frame a multiple organizational layer plan to frame a resource-energetical-efficient plan focused on sustainability and local resources abundance.

GOAL 8: Decent Work and Economic Growth

As shown in Figure 8, Denmark's GDP per capita overtakes with a significant margin both the EU average and the Romanian one. The variance for Romania recorded in 2018 a 55% increase over 2006, while for Denmark and the EU, recorded only a 3% and respectively a 11% increase. The ascending trend is good for all countries, but the large gap between Romania and the EU average should diminish.

Figure 8. Real GDP per capita (SDG8)



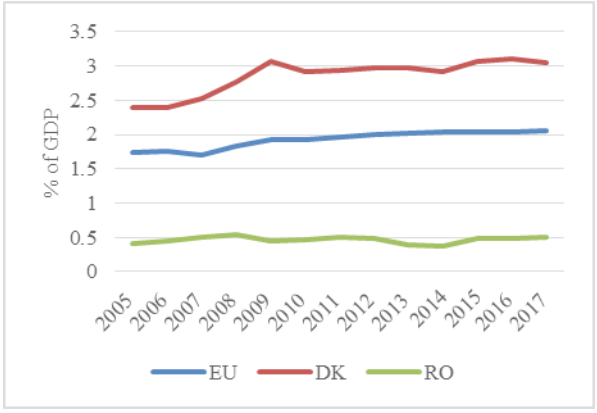
Source: Eurostat

The inclusive and economic prosperity together with great work conditions lack guidance in Romania's Voluntary Review, but it could be improved with the economic growth registered in the last couple of years and what is great to be pointed is that, percentual, Romania is investing more and more yearly, an excellent method of improvement.

GOAL 9: Industry, Innovation and Infrastructure

As it can be noticed in Figure 9, Romania is not focusing enough on the R&D, an important factor for improvement and growth in a adding value sector. On the opposite pole, Denmark recognizes the importance of R&D and surpasses the EU average. Romania is not spending enough, below 1% of the GDP, the highest value being recorded in 2017 with 0.4% of GDP spent on R&D.

Figure 9. Gross domestic expenditure on R&D (SDG9)



Source: Eurostat

This goal translates for countries like Denmark, into clear volumetric measurements of the passengers' numbers and the small and medium enterprises labor force. Transportation and motorways are a weak point of Romania and together with a lack of political involvement, it can't be easily reinforced. The EU database focuses on

industries like R&D, high-end technology manufacturing and public transportation where innovation should drastically improve the quality of the services delivered, sectors that need realignment with the western society, especially for Romanians.

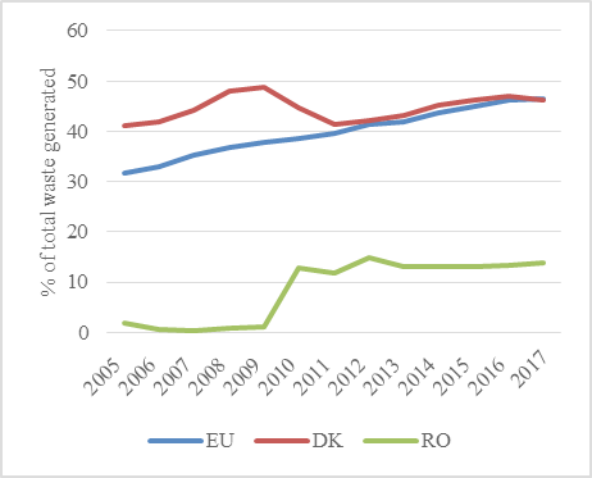
GOAL 10: Reduced Inequality

Tenth goal focuses on inequalities reduction among nations, where Denmark focuses on household expenditure and general incomes, Romania showed political instability and room for improvement. Inequality can be notified even within the EU borders where most of the imports and exports happen within the EU customs but do not extend to outside developing areas. Importing from developing counties helps the local community and promotes growth to the respective economical actors.

GOAL 11: Sustainable Cities and Communities

The interesting rate shown in Figure 10 is representing a fair view of the recycling rate in Romania, this aspect of a circular and sustainable economy has not had the chance to develop yet, leaving room for improvement. On the opposite pole, there sits Denmark with a rate that matches the EU average, showing the incredible efforts of the municipalities to recycle. It is good to note the Romanian variance over the years and the visible improvement but only a 14% recycling rate in 2017 is not meeting the EU standards and it should represent an urgent matter for all the stakeholders.

Figure 10. Recycling rate of municipal waste (SDG9)



Source: Eurostat

In the National Reviews, Romania showed the decreasing of poor people over the last couple of years where Denmark showed the investment into the urban air, culture and environment in the same report section. What was previously noted is that Romania needs to take Denmark as an example and to encourage the corporate sector to invest more into the environmental protection and not to rely only on the governmental efforts in order to have a clean air to breathe. In a crowded world, it is very relevant to show

the area where a person or family successfully carries out their day-to-day activities and it could be observed that Romanians lack many square meters when compared to the EU average. Cities, represented by the citizens, together with the municipalities, private and public sector should focus more on achieving the recycling quotas imposed by the EU Environmental Agency of 50% for the household materials by 2020 through the Waste Framework Directive.

GOAL 12: Responsible Consumption and Production

The next SDG, relies on sustainable consumptions patterns, both countries framing relevant lines but Denmark is one step ahead of other nations especially of Romania when it is measuring its own efforts with unique indices. This aspect can be translated into a growth in production sector especially where the respective country bears sustainable resources.

GOAL 13: Climate Action

Goal thirteen focuses on urgent actions taken to counter the climate changes, it was shown before that both analyzed countries did not publish any data in the voluntary review in this category. Romania should consider the international commitment for climate change and with a greener focus of the governmental bodies, could take real action in order to retaliate the climate emergency status declared by the EU officialities.

GOAL 14: Life Below Water

The fourteenth goal in Denmark focuses on the fish catch that should always be preserved under sustainable levels while Romania is not highlighting enough about this SDG, even though fishing is having a real importance for the coastal counties of Romania. Romania should describe more of its efforts under the Operational Programme for Fishing and Maritime Businesses.

GOAL 15: Life on Land

The fifteenth goal stands for actions against desertification and features sustainable forest management. Denmark points the efforts in this regard and the importance of anti-desertification measures while Romania is presenting the rich landscape of the forests and not a significant action against the massive deforestation that left scars for the present and future generations. Big efforts should be considered for Romania to restore the original forest area and to rapidly increase the forest area.

GOAL 16: Peace and Justice Strong Institutions

The sixteenth SDG promotes justice, peace and inclusiveness. Romania is not showing suggestive data in the voluntary papers while Denmark is open to help the international detainees but where Romania is lacking initiative is in the homicide death rate where major investigations should be realized. The judicial system of Romania could be more independent and should absolutely be out of political influences, situation related in the last couple of years for Romania and together with the general corruption status could represent a key focus of every governance.

GOAL 17: Partnerships to achieve the Goal

The seventeenth SDG targets the global partnership and both countries focus on international cooperation. Governmental debt could represent a diminishable objective for all the EU member states in order to regain more economical independency on the one hand, but on the other hand, taxes needs to charge more its citizens (both individuals and legal entities) for the negative environmental impact in order to encourage positive attitude towards the environment.

Conclusion

Romania as previously observed, has the potential to improve its sustainable development path and the respective goals, if a proper investment strategy is applied. Denmark is for sure an example, not only for Romania but for all the EU Member States.

The SDG-s brought new clarity towards the overall strategy and defined the universal and interconnected layers of their applicability. It is essential to understand that success can only be achieved through cooperation, clear funding schemes and effort recognition even at individual level.

Romanian policies and practices need to consider the multiple signs and international trends as the ones highlighted in the present paper (extensive public and private growth mechanisms) in order to outline the most up-to-date priorities for the country. Statistical background and strong reporting capabilities indicate a data-collective national system of Romania, that points out pluses and minuses in this SDG-s achievement journey. To formulate the clear commitment of the government, even though it is already backed up by legal frameworks, it could be noted how the authorities would deliver satisfactory results not only through standardized yearly reports. Romania, a country that triples the population of Denmark but is hardly achieving one fifth of the Danish GDP in euro/capita, is having room for improvement. Socioeconomic disparities, potential maximization, innovation & research focus, cooperation promotion, public health state, education improvement, young people unemployment, waste management, responsible consumption, climate action and international cooperation represent urgent needs .

Essential to acknowledge that policies, especially global frameworks as the SDG-s, can't be applied uniformly at large scale, they are implemented according to the national, regional and local peculiarities as Denmark proceeds even from the first chapter of the National Review.

Paper limits

All data analyzed above and structured as multiple suggestions for Romania may represent a starting point for reaching all the SDG-s; nevertheless, one should remember that these suggestions are based on the official data and documents available at the current date. The main objective of this paper has been reached but there is still plenty of data that needs to be analyzed for further alignment with the Agenda 2030 goals.

The strategies presented above are strictly tied to the analyzed database and should be considered as being theoretical because it is needed a more complex study that perfectly tailors national needs as a part of a well-defined action plan. The datasets used in the regression models do not reach present time, 2020, but match the Voluntary National Reviews time span.

Further studies

Could the SDG-s be within our reach by 2030? How could progress be marked if not by replicating the efforts and results of the top performing States across the globe? The progress of the least SDG achieving countries could represent, together with a more in-depth plan for each state, the objective of future studies.

Other nations' approach that are situated in the top of the SDG index could also represent an interesting and different point of view then the one of Denmark. Romania's progress beyond year 2020 and what changes would be recorded during the next Voluntary Review cycle is also a possible subject of interest.

Conflict of interests

The author declares no conflict of interest.

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ANNEX

Table A1. Dual analysis of the SDG-s based on the National Voluntary Reviews

SDG	*Denmark - status*	*Romania - status*	*Romania – suggestions & remarks*
1 – No poverty	*Danes have noted the absence of a national poverty threshold as indicated by UN and several indices are presented to describe the risk of poverty.*	*Romania is not focusing specifically around this SDG.*	*Because Romania did not include this goal in the paper review does not mean that poverty is eliminated. According to Eurostat, the GDP at current market prices by NUTS 2 in Romania, showed an ascending trendline from 2008 to 2017 and recorded the maximum value, in its least developed region, around EUR 6800 per capita in 2017, compared to the least developed region in Denmark (GDP wise), Sjaelland which recorded a value of EUR 34800 per capita in 2017 (Eurostat, 2020). Romania's NE Region still sits behind weak economic background. Macroeconomic decisions are not important to be noted but at least, Romanian review should highlight the measures implemented in the least developed regions in order to increase the quality of life.*
2 – Zero hunger	*Denmark calculated several indices analyzing volume of production per labor unit and the agricultural surface of sustainable agriculture.*	*Romania is not focusing specifically around this SDG.*	*An important aspect that should be highlighted under Romania's review is the share of Romanian farmers in the total number of European farmers, they accounted around 21.4% of total EU farmers in 2009-2018 period (Eurostat, 2020). Moreover, Romanian farmers have the lowest income levels in the EU; this should stimulate the public authorities to pay more attention to this very important work area (Eurostat, 2020).* *When making the comparison between Danish and Romanian agricultural output, the values recorded for Denmark in 2014 were approximatively USD 13.4 mil (with a 12% increase reported from 2008) and for Romania in 2014 were approximatively USD 18.6 mil, with a 30% decrease reported from 2008 (F.A.O., 2020).* *Denmark has a higher gross agricultural output per capita (USD 2379) than Romania (USD 931). In this case, Romanian authorities and businesses should consider new ways of improving agricultural output and to give more opportunities to the small farmers, 92.2 % of the holdings had less than 5 ha in 2017 (Eurostat, 2020).*

SDG	Denmark - status	Romania - status	Romania – suggestions & remarks
3 – Good Health and Well-Being	Denmark is also tackling multiple targets and creating special indices adapting the UN goals to the Danish specificity.	Romania is following the National Health Strategy and is targeting different parts of this SDG with the maternal mortality analysis, under five mortality topics, trendline of AIDS and other, in total 8 out of the 9 total target goals.	Romania, in this case, can improve the better tracking of most affective illnesses and to work for an improved health system.
4 – Quality Education	The indicators of this SDG are focusing on the quality of education and the quality of learning and assuring that all children have a minimum proficiency in language-reading and mathematics. Another topic of the Education SDG is the information and communications technology skills recognized as a current trend for the success of becoming an entrepreneur in order to effectively join the labor market. Danish government emphasizes the average of digital skills above the EU level for all the pupils.	A design based on each target is absent, but the current structure is focusing on Romania's most important, education-related, problems that are early school leavers and teachers' salaries.	An important factor is the literacy rate, Denmark did not need to mention due to the complete fulfillment for the whole population, but Romania should have mentioned details about this indicator as in 2015 (World Bank, 2020) it recorded around 98.75% of the population older than 14. Another important aspect that Romania should be following is the principle of obtaining results and it should consider the proportion of students promoting the baccalaureate examination, 69.7% in 2018 according to the Education Ministry of Romania (Education Ministry, 2020) and the general improvement of it as this exam represents an important milestone for each student's future. What is quintessential to be improved in Romania is the GDP allocated to education, in 2014 it recorded the lowest value from the whole EU with 2.75% compared to the Denmark's 7.6% which represents the largest percentage of GDP allocation for education (Eurostat, 2020).

SDG	Denmark - status	Romania - status	Romania – suggestions & remarks
5 – Gender Equality	Denmark focuses on violence elimination, seats held by women in national governmental bodies and women access to high end technology.	Romania is not focusing specifically around this SDG.	When analyzing the earnings survey, it can be noticed that Romanians monthly salary in the Services type of industry in 2014 was EUR 546 for men while for women was EUR 551, the only sector where the women overpass the men, while in Denmark, data for women recorded EUR 2953 against EUR 4098 for men as it could be observed even in this type of industry, men overtake the monthly earnings of women (Eurostat, 2020). In Romania a good thing is that there are no big differences between men and women in most of the categories, but the actual level of the income is way below the average of the EU. Romania should maintain the small gap but to find better ways for improving the monthly income in the upcoming future as it is needed for a prosperous and sustainable life.
6 – Clean Water and Sanitation	In Denmark, the focus is on adequate water supply, water quality, wastewater treatment and freshwater withdrawal. 100% of the Danish people have access to water, sanitation and sewage.	This SDG is formulated under the Protocol for Water together with the one for Health. It consists in detailing past infrastructure projects that developed the water and wastewater networks together with treatment plants and the work done to improve the flood protection system.	It is interesting to note that Romanian water supply access throughout the country covers only 62.4% of the total need (only 62.4% of the population in 2014 had access to the public water supply system) and what should be highlighted is the fact that Romania's drinking water supply network remained unchanged for the period 2012-2017 when counting the localities (out of the 3284 communes, towns and cities only 2534 were connected to the drinking water supply installations) (INSSE, 2020). Another topic that needs to be mentioned is that only 52% of the population was connected to the sewage system at the end of 2018 and under 10% of the rural citizens benefit of these kind of services according to the paper's protocol on achieving the Water SDG and the government is continuously working to develop the infrastructure, but greater effort is needed due to the high importance of this service for the wellbeing of the nation.

SDG	Denmark - status	Romania - status	Romania – suggestions & remarks
7 – Affordable and Clean Energy	Denmark is targeting several indices and among them it can be found, population's access to electricity, population relying on clean energy and technology, share of renewable energy out of total energy consumption and investments in clean energy as percentage of GDP, index measuring close to 3.6% in 2015.	The report focuses on the renewable energy share and on the future change of biomass to renewable energy for household heating. Recognizing the high percentage of firewood used in the rural areas, multiple plans for alternative heading sources are being developed. In order to fulfill this SDG, Romania is designing several lines of action for a plan in some industries formulating energy cost efficiency procedures.	Romania is willing to highlight the constant effort that should be recalled but in fact, no indices are presented. Romanian government should follow the Danish example or at least use the European Commission's indices, the most important of them are the share of renewable energy in gross final energy consumption (Denmark recorded a 124% increase in 2017 compared to 2005 reaching almost 36% for the Renewable energy source; a 1446% increase in 2017 compared to 2005, almost 6.9% in the transport sector and a 104% increase in 2017 compared to 2005 reaching almost 46.6% in the heating and cooling sector while Romania recorded only a 42% growth for the first category, 298% growth for the second category and 48% growth in the third category) (Eurostat, 2020).
8 – Decent and Economic Growth	Denmark's current review is highlighting the GDP growth compared to the rest of the EU, material consumption, female earnings, pay gaps and unemployment rate.	Romania is not focusing specifically around this SDG.	What should be highlighted, and Romania could mention is the GDP annual growth rate that it recorded historical heights (6.9% in 2017 compared to 4% in 2015) as compared to Denmark (2.2% in 2017 compared to 2% in 2015) (World Bank, 2020). What is also relevant for Romania is the low unemployment rate standing at an average of 4% in 2018 across all educational levels compared to the 5.3% of Denmark under the same conditions. For both countries, the unemployment rate fell down year on year.
9 – Industry, Innovation and Infrastructure	Denmark is reviewing the passenger and freight volumes, manufactures added value, persons employed in small scale enterprises and several other indices for all the 5 targets of this SDG.	Romania is not focusing around this SDG.	Romania should be highlighting the strategies for infrastructure development but what is important to note is the fact that Romania's motorways length was summing 763 km in 2017 while in Denmark the total length was of 1308 km, comparing the E-road length in Romania of 6200 km to the 945 km of Denmark (Eurostat, 2020). Addressing to the total area of the country, Romania is not satisfying the need of motorways. Infrastructure represents an urgent issue for the Romanian governance.

SDG	Denmark - status	Romania - status	Romania – suggestions & remarks
10 – Reduced Inequalities	Topic focusing on household expenditure and incomes.	Romania is not focusing around this SDG.	Both nations should consult this specific SDG targets and create better policies to ensure equal opportunities, knowing the political instability of the recent Romanian times, the governance could improve their actions. What is important to be noted is that in 2018, population at risk of poverty or social exclusion in Romania recorded 6360 thousand people (33% from the total population) while Denmark had only 997 thousand people (17% from the total population) (Eurostat, 2020).
11 – Sustainable Cities and Communities	Danish paper sticks closely to most of the targets, analyzing the ratio of land consumption rate to population growth rate, expenditure on cultural and natural conservation, environment impact in cities and air quality.	Focusing on the Smart Cities concept, analyzing the people living in poor conditions (emphasizing the general yearly decrease), noise pollution, urban air pollution and the SDG targets completion status.	What needs to be highlighted is the Romania's representation in the national expenditure on environment protection index database from Eurostat, a measurement that involves the total EU economy that does not contain Romania at all. Denmark is leading the charts when compared to the size of the country, spending EUR 5876 million in 2016 for this important aspect and the least significant part of the total economy is the governmental sector that is easily overtaken by households and corporations (for the corporate sector, the environmental protection expenditure triples the governmental one in 2016) (Eurostat, 2020). What Romania could do is to keep the track of the private and governmental environmental protection expenditure and continuously try to improve it.
12 – Responsible Consumption and Production	Denmark is focusing on multiple targets composing its own indices as material consumption, hazardous waste and recycling rate.	Romania highlights the importance of a strong national framework for sustainable consumption and production analyzing waste generators, resource productivity and most of the policies put in place for the future.	The policies described for Romania are a good start, but sustainable consumption and production is a next level improvement that should be focused on by the authorities in direct cooperation with the industries and the NGOs.
13 – Climate Action	Denmark is not presenting any data at the current stage.	Romania is not focusing specifically around this SDG.	Both countries lack data and analysis in this regard signaling the urgent need of a concrete plan that needs to be implemented for global climate aid.

SDG	Denmark - status	Romania - status	Romania – suggestions & remarks
14 – Life Below Water	Denmark focuses on maintaining fish stock percentage within sustainable levels.	Romania is not focusing specifically around this SDG.	Romania should consider real indices in order to preserve its rich maritime and water ecosystems.
15 – Life on Land	Denmark is highlighting the slightly larger forested area in this section.	Chapter focusing on the rich biodiversity of Romania, on the surfaces of the protected areas and their management, ecosystem, species and genetic diversity, conservation status and the continuous work for Romanian forests.	Romania, besides all the indices, could think and implement a real strategy in order to preserve the rich natural landscape and its wonders, combat the deforestation and increase the governmental and private expenditure dedicated to nature conservation.
16 – Peace, Justice and Strong Institutions	Denmark is highlighting the victims of international homicide and unsentenced detainees.	Romania is not focusing specifically around this SDG.	Romania should present a true and fair representation of the current state of the violence. According to the Eurobarometer 449, in Romania 36% of the respondents answering "how common is the domestic violence against women" say that it is "very common" and 48% say that is "fairly common" while in Denmark 9% are saying that it is "very common" and 50% are saying that it is "fairly common" (out of the 27818 respondents – study concluded in 2016) (Eurostat, 2020). Another important topic is that of the domestic violence being a matter of family and should be treated in the family, Romania being the second country in EU having 32% of the same respondents "totally agreeing" with this fact while in Denmark only 6% of the same people "totally agree", Denmark being the last second country in EU totally agreeing this subject.
17 – Partnerships	Denmark is focusing on the same targets presenting the latest figures.	Targeting specific indicators including the involvement in humanitarian projects, bilateral funds, global partnership and inter-institutional cooperation.	Romania should continue its international focus and could also insert and track the relevant indices.

Source: (Ministry of Environment, 2019), **(Ministry of Finance, 2019)** and other sources mentioned in the text: Eurostat, FAO, The World Bank, European Commission, Romanian Ministry of Education, Romanian Statistical Yearbook for 2018 and The Romanian National Institute of Statistics

Table A2. SDG Bullets - matrix of the analyzed Indices

SDG	GDP	Business Research Exp.	Gov. Environment Exp.	Gov. Education Exp.	Gov. R&D Exp.	Gov. Agricultural R&D Support	Gov. Health Exp.	Gov. Social Protection Exp.	Total investment
1. No poverty	✪								
2. Zero hunger	✪					✪			
3. Good Health and Well-Being			✪				✪		✪
4. Quality Education	✪	✪		✪					✪
5. Gender Equality				✪				✪	✪
6. Clean Water and Sanitation									
7. Affordable and Clean Energy	✪	✪				✪			
8. Decent and Economic Growth	✪		✪	✪	✪	✪			✪
9. Industry, Innovation and Infrastructure		✪	✪	✪	✪	✪			
10. Reduced Inequalities	✪				✪		✪	✪	
11. Sustainable Cities and Communities		✪	✪		✪	✪			
12. Responsible Consumption and Production		✪	✪		✪	✪			
13. Climate Action			✪						
14. Life Below Water			✪						
15. Life on Land									
16. Peace, Justice and Strong Institutions							✪	✪	
17. Partnerships							✪	✪	

Source: Author's correlation

Table A3. Database - Denmark

UM: Euro/ Capita Indicator => DK Year	GDP	Business Research Exp.	Gov. Environment Exp.	Gov. Education Exp.	Gov. R&D Exp.	Gov. Agricultural R&D Support	Gov. Health Exp.	Gov. Social Protection Exp.	Total investment
2000	42,190	616	211	3,411	118	78	2,827	9,408	9,075
2001	42,390	674	254	3,483	114	78	2,925	9,623	9,029
2002	42,430	717	297	3,485	76	79	3,013	9,759	8,758
2003	42,490	739	255	3,451	76	79	3,017	10,070	8,795
2004	43,520	718	261	3,572	74	83	3,133	10,184	8,991
2005	44,400	724	266	3,590	67	94	3,241	10,079	9,399
2006	45,990	740	276	3,555	74	91	3,357	9,980	10,702
2007	46,210	813	231	3,519	37	75	3,558	9,935	10,864

UM: Euro/ Capita Indicator => DK Year	GDP	Business Research Exp.	Gov. Environment Exp.	Gov. Education Exp.	Gov. R&D Exp.	Gov. Agricultural R&D Support	Gov. Health Exp.	Gov. Social Protection Exp.	Total investment
2008	45,700	887	229	3,417	32	74	3,610	9,871	10,484
2009	43,220	921	173	3,652	26	73	3,847	10,502	8,717
2010	43,840	859	175	3,753	26	80	3,770	10,872	7,939
2011	44,240	867	177	3,754	27	69	3,716	10,927	8,034
2012	44,170	861	177	3,197	31	92	3,843	10,866	8,295
2013	44,410	835	222	3,772	31	69	3,775	10,880	8,460
2014	44,890	835	224	3,427	31	93	3,861	10,774	8,601
2015	45,630	885	183	3,554	32	97	3,879	10,723	9,058
2016	46,720	939	187	3,688	33	77	3,924	10,699	9,821
2017	47,360	933	189	3,731	43	87	3,978	10,609	10,036
2018	48,260	941	193	3,795	43	99	4,006	10,569	10,632

Source: Eurostat

Table A4. Database - Romania

UM: Euro/ Capita Indicator => RO Year	GDP	Business Research Exp.	Gov. Environment Exp.	Gov. Education Exp.	Gov. R&D Exp.	Gov. Agricultural R&D Support	Gov. Health Exp.	Gov. Social Protection Exp.	Total investment
2000	4,010	10	8	114	3	0.3	168	417	767
2001	4,130	10	12	134	5	0.3	169	442	869
2002	4,250	10	9	149	4	0.3	174	429	912
2003	4,370	10	9	150	6	0.3	153	424	994
2004	4,860	11	5	158	6	0.3	156	481	1,084
2005	5,120	11	15	177	7	0.3	169	517	1,196
2006	5,560	12	22	237	8	1.4	183	556	1,480
2007	6,050	13	24	249	10	1.4	218	605	2,138
2008	6,730	11	34	277	15	2.4	242	740	2,510
2009	6,410	12	38	259	10	1.4	256	840	1,667
2010	6,190	11	50	216	11	2.9	260	860	1,615
2011	6,350	11	57	194	13	1.9	267	826	1,729
2012	6,510	12	52	192	13	1.5	247	807	1,786
2013	6,760	8	54	207	13	0.7	270	777	1,674
2014	7,020	11	56	219	11	0.8	281	800	1,705
2015	7,320	15	73	227	14	1.2	307	834	1,813
2016	7,720	21	46	257	12	1.2	309	888	1,766
2017	8,320	24	42	276	13	1.1	358	973	1,865
2018	8,740	26	70	289	13	0.7	411	1,014	1,833

Source: Eurostat

UNDERDEVELOPMENT OF RURAL TOURISM IN SERBIA: CAUSES, CONSEQUENCES AND POSSIBLE DIRECTIONS OF DEVELOPMENT

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A B S T R A C T

The aim of this paper is to analyze the development of rural tourism in Serbia. The paper uses the method of survey research, analysis, synthesis, comparative and statistical methods. The author concludes that rural tourism in Serbia is underdeveloped. The reasons for this are numerous, and they primarily relate to problems and limitations in the development of supply, but also to the lack of demand. The consequences are the economic and social decline of rural areas. In order to develop rural tourism in Serbia, it is necessary to adopt new strategic documents, regulations and provide favorable continuous sources of financing for the development of all segments of the offer. For the purpose of balanced rural development, it is necessary to form an association at the national level, which should have branches in all administrative districts and play a key role in the further development of rural tourism in Serbia.

Introduction

Tourism as a phenomenon, by its spatial, economic, sociological, psychological, cultural, political and other connotations, has no counterpart in any otherphenomenon of the modern world (Lakićević & Žarevac, 2014). Tourism has become increasingly important industry, and there are different approaches to defining and measuring the performance of a tourist destination (Durkalić et al., 2019). Rural tourism can be called a "model of rural development". This model implies the development of non-agricultural activities, but also the development of agriculture as a primary activity in rural areas. Also, this model should make it possible to stop the departure of the working population from rural to urban areas.

Factors influencing the development of rural tourism can be divided into factors influencing the increase of supply and factors influencing the growth of demand. Rural tourism in Europe has recorded a rapid growth in the second half of the twentieth century.

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"The growth rate of tourist demand in rural areas on this continent has increased, in the period from 1980-2000 by 52%, which is by far the largest growth compared to other tourist regions" (Bošković, 2003, p.65). Affirmation of the development of rural tourism in Serbia has a base if we look at the availability of natural and social resources, the importance of agriculture, the possibility of rural development based on a multisector approach. Also, there is a need to slow down migration from rural to urban areas for the survival of Serbian villages. However, the average capacity occupancy in rural tourism in Serbia is only 4% (Program for the development of sustainable rural tourism in the Republic of Serbia, 2011), and the average capacity occupancy in rural tourism in the European Union is 25% (Bartlet, 2006).

The European Union strongly supports sustainable development, allocating around 40% of the funds from the rural development budget, as an important component of sustainable development (Balaban et al, 2019, p.1185). CAP become a major instrument in promoting the green development of agricultural areas in European Union (Andrei & Darvasi, 2012; Popescu & Andrei, 2011). According to Gajić et al, (2017, p.912), public and state institutions as well as non-profit organizations play an important role in the development of rural tourism by providing resources, whether in the form of finance or some other form, helping to promote and improve the tourist offer of the region that are less developed.

The authors Bakić & Hrabovski-Tomić, (2010, p.118), believe that the lower limit of profitability, i.e. utilization of accommodation capacities in tourism, is 60%. Having in mind the stated data, and the seasonal character of demand, we believe that self-financing is not a sufficient source, but quality external sources of financing are necessary for financing rural tourism. However, the author Radović, (2016, p.1062), states "self-financing has been a predominant source of financing of rural tourism in the Republic of Serbia so far." The author Milenković, (2009), points out that most countries that have developed tourism also have strong stimulating and protectionist state measures in favor of the development of this activity. Thus, it can be concluded that in the process of rural tourism development, both in underdeveloped and developed countries, the support of the state plays a significant role.

Rural tourism is recognized "as one of the tourist products of special importance for the development of tourism and as a key tourist product for most tourist destinations in Serbia" (Tourism Development Strategy of the Republic of Serbia for the period from 2016 to 2025, 2016). The goals of rural tourism development in Serbia are: diversification of the rural economy, reduction of poverty and improvement of the quality of life of the population in rural areas, as well as preservation of the country's cultural wealth, environmental protection and more balanced regional development (Program for the development of sustainable rural tourism in the Republic of Serbia, 2011).

The countries in the region, which have significantly developed rural tourism in recent decades, have very active national associations of service providers. We believe that they are a significant driver of the development of this activity. The Association of

Tourist Farms of Slovenia has existed in Slovenia since 1997. This Association is active in the promotion, sale, creation of the Slovenian rural tourism product brand, market research, as well as education of farmers engaged in rural tourism. The most important activity of the Association is cooperation with state authorities in the process of adopting regulations and planning documents related to the development of rural tourism in this country. According to Vujko et al, (2016, p. 1466), "developed rural tourism in Slovenia contributes not only to higher profit gain by households, but also to a variety of tourism offer, preserving tradition." There is Hungarian Federation of Rural and Agro tourism in Hungary. The most important goal of this Association is the realization of activities in order to enable the improvement of living conditions of the rural population through the development of rural tourism. The national associations of rural tourism service providers in Austria have the same goals - "Urlaub am Bauernhof in Ősterreich", and in Romania - National Association of Rural Ecological and Cultural Tourism - ANTREC". The group of authors Sin et al, (2020, p.631), conclude that „in Romania, areas with rich environmental and cultural landscape have specialised in rural tourism". The evolution of the Romanian tourism before the EU accession is a good example that, there are positive results when the investors and the authorities follow the same way and have the same objectives (Roşu & Voicilaş, 2019, p.1036).

The official data, listed in the Program for the Development of Sustainable Rural Tourism in Serbia, state that rural tourism is already developed in "some parts of Vojvodina, western and central Serbia" (Program for the development of sustainable rural tourism in the Republic of Serbia, 2011). There are no more specific official data on the development of rural tourism in Serbia, and this will be the subject of research in this paper.

We present the potentials and problems in the development of rural tourism in Serbia based on the results of researches conducted in the last decade.

According to the results of the research Cvijanović et al, (2016), Serbia does not have the development of rural tourism adequate to the resources at its disposal and in accordance with the fact that rural areas make up as much as 85% of its total territory. The authors Petrović et al, (2018, p.10), conclude that "in the last decades, Serbian rural tourism has not achieved a high level of development, which resulted in low competitiveness in the international travel market". According to Dedeić, (2015, p. 35), the limitations for the development of rural tourism in Serbia are the economic backwardness of rural areas, unfavorable age and educational structure of the population, poor roads and underdeveloped tourist offer. The author Matijašević-Obradović, (2016, p.33), believes that „in order for the tourist activity to represent a significant element in the total gross domestic product of Serbia, in addition to economic investments, appropriate legal regulations are necessary".

According to the research Chroneos-Krasavac et al, (2018, p. 1573), "in many countries, rural areas are undergoing significant socio-demographic and economic changes, and this trend is also present in Serbia". A group of authors Otović et al, (2018, p.50), points

out that "the competitive advantage of Vojvodina, in addition to agriculture, is, above all, rural tourism." The authors Bošković et al, (2011, p.40), conclude that the future development of rural tourism in Vojvodina "will depend on state support, which must be much stronger and more active than before." According to Muha, (2013, p. 129), „rural tourism in Vojvodina should contribute to the preservation of rural environment and cultural heritage, and also economically motivate local people to stay in the countryside". A group of authors Krejić et al, (2019, p.54), point out that the key to development is that "companies in the tourist market of Vojvodina compete and that the main criterion of business is their efficiency." In the literature, we find the conclusion that agritourism is a very suitable additional source of income for agricultural farms in Vojvodina Bošković & Maksimović, (2017, p.45). The author Petrović, (2016, p.48), believes that in order to improve the tourist offer in Srem, it is necessary to educate the bearers of rural households, analyze the tourist market, invest in infrastructure and create a safe environment, as well as strengthen cooperation with the local population.

Some researchers give suggestions on how to improve the tourist offer in rural areas. The group of authors, Jegdić et al, (2017, p. 233), suggests that "placing the organically produced products into the tourism offer would ensure profitability and sustainability of organic production and authenticity of tourism offer". According to research data Čikić et al, (2015, p. 129), the development of rural tourism in Vojvodina is the result of professional support of professionals, of which 1/5 of the total number has been engaged in this area in the past few years. A group of researchers came to the conclusion in their research that "the age and gender structure are of crucial influence for the participation of potential tourists in rural tourism" (Demirović et al, 2018, p.73). The great potential for the development of rural tourism in Vojvodina is represented by farms, and the basis of the tourist offer of farms is authentic local dishes and drinks with the taste of traditional cuisine (Vujko et al, 2017, p.60).

Other regions in Serbia also have potentials for the development of various forms of rural tourism. According to Ilić et al, (2020, p.157), „the Strategy of the Timok region in Eastern Serbia should be based on Healthy-sports and recreational tourism because the investments in this project are lower than the investment of other projects of tourism". A group of authors concludes that Serbia has a good resource potential for the development of ecotourism (Matijašević-Obradović, 2017, p.29). According to Vujko et al, (2018, p.81), "the development and realization of rural tourism in the municipality of Šabac must take place through cooperation not only at the level of local communities, but also through regional cooperation and integration into wider international programs". A group of authors states "we could conclude that many of the most significant tourist attractions in Šumadija are located in the rural area, and that there is potential for the development of different forms of tourism, besides rural, primarily cultural and tourism of special interest" (Matić et al, 2019, p.883). According to Milićević et al, (2020, p.235), "all this would contribute to faster development of eco-tourism as well as greater competitiveness of Mount Goč in the eco-tourism market".

In almost all regions in Serbia, there are opportunities for the development of Wine tourism, as a special form of rural tourism. For that purpose, a group of authors proposes "creating and managing desired image and reputation represents a basis for successful positioning of a winery in the consciousness of visitors" (Jević et al, 2019, p.1167). Considering that modern tourists are increasingly demanding, better organization of entities that make up the rural tourist offer in Serbia is needed. According to Mirčetić et al, (2019, p. 862), „organizations working in tourism sphere have to achieve an optimal level of their business process". Some regions have noted an expansion in the development of rural tourism in recent years. Such is the case in the Moravica district, in Ivanjica and its surroundings. A group of authors on the basis of the realized research concludes "the tourism potential of this area is not completely exploited" (Sagić et al, 2019, p.847). Some rural areas regularly have a better position in the tourist market. According to the research Pavlović & Čavlin, (2014, p.610), „taking into account the categorization of accommodation, not just the number, villages on Zlatibor show advantage".

Causes and consequences of underdevelopment rural tourism in Serbia

Rural tourism began to develop in Serbia in the 1970s, earlier than in other republics of the Socialist Federal Republic of Yugoslavia. However, rural tourism in Serbia today is less developed than in Slovenia and Croatia, as well as other countries in the region (Radović, 2017). We believe that the causes are numerous and can be found in the previous, but also in the current period: (a) rural tourism has never been seen as a primary priority in the development of tourism in Serbia, although 85% of the territory is rural; (b) there is a lack of financial resources for the development of all aspects of the offer (catering and accommodation facilities and tourist facilities); (c) there is insufficient financial investment in the maintenance and development of rural transport and communal infrastructure; (d) there is an insufficient association and education of service providers; (e) there is insufficient promotion and development of the brand in the domestic and foreign markets; (f) there is a lack of interest of travel agencies to sell this product due to low margins; (g) there is a lack of service quality standards and a lack of an institution at the national level that would deal with categorization and thus avoid the subjectivity of local governments in interpreting norms; (h) there is a lack of official data on the number of service providers and tourist traffic that they realize.

The causes of underdevelopment are also on the demand side. Due to increasing social stratification and the disappearance of the middle class, which was traditionally the buyer of this tourist product, sales have also decreased. The hosts turned more to foreign guests, but their expectations, apart from natural beauties and gastronomic pleasures, were usually not met. The expected quality of services, which includes a certain category, was mostly absent. Another problem is the lack of tourist facilities. The stated shortcomings of the offer are also most often mentioned by domestic tourists, who were unintendedly directed to rural tourism by the current epidemic caused by the corona virus.

The consequences of the underdevelopment of rural tourism are, above all, the underdevelopment of rural economies, because agriculture alone cannot be the force of economic development. As a result, there is an increasing migration from rural to urban areas, in order to find employment and better living conditions. The rural population is getting older, and there are villages without any inhabitants. The cultural and historical heritage of rural areas is slowly disappearing. On the other hand, overcrowding and unemployment occur in urban areas.

Methodology and Data Sources

The aim of this paper is to analyze the development of rural tourism in Serbia. For that purpose, a survey was conducted in 11 administrative districts and 31 municipalities on the territory of Serbia. There are districts: West Bačka, Zlatibor, South Bačka, Kolubara, South Banat, Mačva, Šumadija, Moravica, Pirot, North Bačka and Srem. Based on the current data of the National Association "Rural Tourism of Serbia", rural tourism is represented in 85 municipalities (http://www.selo.co.rs). It can be concluded that the sample represents 36% of the total number of municipalities in whose area rural tourism is represented in Serbia in the current period. Municipalities were selected on the basis of monitoring reservations, i.e. the interest of tourists in rural tourism in their area in the previous one-year period. In order to present the results of the research, the method of synthesis was used, i.e. the data were presented at the level of the district, and not the municipality, for the purpose of better visibility.

It is necessary to point out the fact that in Serbia there are no official data on the number of entities engaged in rural tourism, as well as on the tourist traffic that they realize. These data will be available only after the introduction of the "e turista" portal, which is defined by the latest amendments to the Law on Tourism (Law on Tourism, 2019). Therefore, the research uses data from the National Association "Rural Tourism of Serbia", which has the most complete database of rural tourism entities in Serbia. This association was founded in 2002 and is the representative of the Republic of Serbia in the European Organization for Rural Tourism (EUROGITES).

The survey included 104 agricultural farms engaged in rural tourism. According to the data of the last official census of agriculture, there are a total of 514 agricultural farms in Serbia engaged in rural tourism (Census of Agriculture 2012, pp.190-197). Based on the above, it can be concluded that the sample includes 20% of the total number of agricultural farms engaged in rural tourism in Serbia. The sample was selected by random sampling.

The instrument used in the research is a questionnaire. The questionnaire included questions on the length of the period dealing with rural tourism, the number of realized tourist nights and the amount of realized income in the last year, investment planning and financing, as well as the share of marketing costs in total expenditure.

The main hypothesis is: rural tourism in Serbia is underdeveloped. The auxiliary hypothesis is: rural tourism entities that invest in marketing earn higher incomes, i.e.

have a better development of rural tourism. The paper uses the method of field and survey research, analysis, synthesis, as well as comparative and statistical methods. In the statistical processing of data obtained by the survey, the following methods were used: descriptive statistical analysis, non-parametric statistical test - χ^2 (Chi-square) test. Data were processed by SPPS software package.

Research Results and Discussion

The results of statistical processing of data on the length of the period of rural tourism are presented in Table 1.

Table 1 - Length of the period of dealing with rural tourism

Districts	Length of the period of dealing with rural tourism									
	Up to 1 year		1-3 years		3-5 years		More than 5		TOTAL	
	Number	%	Number	%	Number	%	Number	%	Number	%
West Bačka	6	*55*	2	*18*	2	*18*	1	*9*	**11**	*100*
Zlatibor	-	-	3	*12*	10	*40*	12	*48*	**25**	*100*
South Bačka	2	*29*	1	*14*	1	*14*	3	*43*	**7**	*100*
Kolubara	-	-	-	-	4	*36*	7	*64*	**11**	*100*
South Banat	-	-	-	-	1	*14*	6	*86*	**7**	*100*
Mačva	-	-	2	*40*	3	*60*	-	-	**5**	*100*
Šumadija	-	-	4	*36*	2	*18*	5	*46*	**11**	*100*
Moravica	-	-	2	*18*	3	*27*	6	*55*	**11**	*100*
Pirot	-	-	2	*33*	4	*67*	-	-	**6**	*100*
North Bačka	-	-	-	-	2	*40*	3	*60*	**5**	*100*
Srem	-	-	3	*60*	2	*40*	-	-	**5**	*100*
TOTAL	**8**	*8*	**19**	*18*	**34**	*33*	**43**	*41*	**104**	***100***

Source: Statistical processing of the survey research

It can be concluded that, observed in all districts, the largest number of surveyed entities (41%) have been engaged in rural tourism for more than five years. The number of subjects engaged in this activity is from three to five years (33%), from one to three years (18%) and up to one year (8%). Stated information points to the conclusion that the surveyed subjects have sufficient experience in dealing with rural tourism, and their answers can be considered relevant in the research. Observed by districts, the surveyed entities in the area of West Bačka are engaged in rural tourism the shortest and the longest in the area of Zlatibor district.

The results of statistical processing of data on the number of realized overnight stays in the last year are presented in Table 2. It can be concluded that in total observed in all districts, the largest number of surveyed entities (39%) realize up to 100 tourist overnight stays per year. In terms of number, the following are entities that realize up to 300 overnight stays and they make up 32% of the total number of respondents. Entities that realize up to 500 tourist overnight stays per year make up 16% of the

total respondents, and 13% of the surveyed rural tourism entities realize more than 500 tourist overnight stays per year. Considering that the entities that realize up to 100 tourist nights per year have the largest individual participation, and that they together with the entities that realize up to 300 tourist nights (which is also insufficient for optimal capacity utilization) make up 71% of the total number of surveyed entities, we can conclude that rural tourism in Serbia is underdeveloped. This is also a confirmation of the main hypothesis.

Table 2 - Number of realized tourist nights

Districts	Number of realized tourist nights									
	Up to 100		100-300		300-500		More than 500		TOTAL	
	Number	%	Number	%	Number	%	Number	%	Number	%
West Bačka	10	*91*	1	*9*	-	-	-	-	11	*100*
Zlatibor	10	*40*	7	*28*	4	*16*	4	*16*	25	*100*
South Bačka	6	*86*	1	*14*	-	-	-	-	7	*100*
Kolubara	-	-	8	*73*	3	*27*	-	-	11	*100*
South Banat	-	-	1	*14*	4	*57*	2	*29*	7	*100*
Mačva	-	-	5	*100*	-	-	-	-	5	*100*
Šumadija	5	*45*	1	*9*	3	*28*	2	*18*	11	*100*
Moravica	5	*45*	1	*9*	3	*28*	2	*18*	11	*100*
Pirot	3	*50*	3	*50*	-	-	-	-	6	*100*
North Bačka	2	*40*	-	-	-	-	3	*60*	5	*100*
Srem	-	-	5	*100*	-	-	-	-	5	*100*
TOTAL	**41**	*39*	**33**	*32*	**17**	*16*	**13**	*13*	104	*100*

Source: Statistical processing of the survey research

Observed by districts, the surveyed entities that realize up to 100 tourist overnight stays per year are mostly in the districts of West Bačka, South Bačka, Šumadija and Moravica, but these entities also make up 40% of the surveyed entities in the Zlatibor district. More than 500 tourist overnight stays are realized by the surveyed subjects in the area of North Bačka, Moravica, Šumadija, Zlatibor and South Banat districts. In this group are entities that have been engaged in rural tourism for more than 10 years, already having a strong market position.

The results of statistical processing of data on the amount of realized total income from rural tourism in the last year are presented in Table 3. Based on the presented data, it can be concluded that, observed in all districts, the largest number of surveyed entities (36%) realize annual income up to RSD 150,000. Annual income up to RSD 300,000 is realized by 24%, up to RSD 500,000 by 14%, up to RSD 1,000,000 by 9%, and over RSD 1,000,000 by 17% of the total number of surveyed entities. Therefore, in the sample surveyed, the subjects with the lowest annual income have the largest share, which points to the conclusion that rural tourism in Serbia is underdeveloped, i.e. it

confirms the main hypothesis. In terms of the type of service provided by the surveyed entities to tourists, the results are as follows: (a) full board service is provided by 67.3%; (b) overnight service only 14.4%; (c) bed and breakfast service 13.5%; (d) half board service 2.9%; (e) catering service only 1.9%. These facts point to the conclusion that the largest number of surveyed entities provides full board services to tourists, but this is not visible on the realized income due to the small number of tourist visits.

Table 3 - The amount of realized income in rural tourism

Districts	The amount of realized income in rural tourism											
	up to RSD 150,000		150,000-300,000 RSD		300,000-500,000 RSD		500,000 – 1,000,000 RSD		more than RSD 1,000,000		TOTAL	
	Broj	%	Broj	%	Broj	%	Broj	%	Broj	%	Broj	%
West Bačka	10	*91*	-	-	1	*9*	-	-	-	*9*	11	*100*
Zlatibor	8	*32*	5	*20*	3	*12*	-	-	9	*36*	25	*100*
South Baćka	5	*71*	2	*29*	-	-	-	-	-	-	7	*100*
Kolubara	-	-	4	*36*	2	*18*	5	*46*	-	-	11	*100*
South Banat	--	-	-	-	2	*29*	3	*43*	2	*28*	7	*100*
Mačva	-	--	-	-	5	*100*	-	-	-	-	5	*100*
Šumadija	3	*28*	4	*36*	1	*9*	1	*9*	2	*18*	11	*100*
Moravica	6	*55*	3	*27*	-	-	-	-	2	*18*	11	*100*
Pirot	3	*50*	2	*33*	1	*17*	-	-	-	-	6	*100*
North Bačka	-	-	2	*40*	-	-	-	-	3	*60*	5	*100*
Srem	2	*40*	3	*60*	-	-	-	-	-	-	5	*100*
TOTAL	**37**	*36*	**25**	*24*	**15**	*14*	**9**	*9*	**18**	*17*	**104**	*100*

Source: Statistical processing of the survey research

The entities that generate the highest annual revenues are located in the Zlatibor, South Banat, Šumadija, Moravica and North Bačka districts. These entities have a developed market position, but most of them also generate income from the sale of their own agricultural products and preserved food to tourists, the so-called "Takeaway". Also, according to the results of the research, it can be concluded that these entities, in addition to quality service, which includes mostly, full board, provide tourists with quality tourist facilities such as swimming pools, saunas and the like.

Table 4 - Investment planning

Districts	Investment planning					
	Yes		No		TOTAL	
	Number	%	Number	%	Number	%
West Bačka	5	*45*	6	*55*	**11**	*100*
Zlatibor	11	*44*	14	*56*	**25**	*100*
South Bačka	3	*43*	4	*57*	**7**	*100*
Kolubara	2	*18*	9	*82*	**11**	*100*
South Banat	2	*29*	5	*71*	**7**	*100*
Mačva	3	*60*	2	*40*	**5**	*100*
Šumadija	5	*45*	6	*55*	**11**	*100*
Moravica	10	*91*	1	*9*	**11**	*100*
Pirot	3	*50*	3	*50*	**6**	*100*
North Bačka	1	*20*	4	*80*	**5**	*100*
Srem	4	*80*	1	*20*	**5**	*100*
TOTAL	**49**	*47*	**55**	*53*	**104**	*100*

Source: Statistical processing of the survey research

The results of statistical processing of the survey results, in terms of investment planning for the next five years, are presented in Table 4. Investments include the development of tourist capacity, as well as the development of tourist facilities. Based on the presented data, it can be concluded that, observed for all districts, the largest number of surveyed entities, as many as 53%, do not plan investments. This explains that there is no investment in development, i.e. there is underdevelopment of rural tourism, which confirms the main hypothesis of this research. Entities planning investments make up the majority of the surveyed entities only in three districts: Mačva, Moravica and Srem. A five-year period was used in the survey questionnaire because that length of the investment period is most present among the surveyed rural tourism entities in Serbia.

The results of statistical processing of survey results, in terms of the share of marketing costs in the structure of total annual expenditures of surveyed rural tourism entities in Serbia are presented in Table 5. Marketing costs include costs for paid promotion in printed and electronic media, fairs, flyers etc. Based on the presented data, it can be concluded that 48% of the total number of respondents do not allocate funds for marketing costs at all. Such a business attitude will reflect on the underdevelopment of rural tourism in Serbia in the future. About 30% of the total number of surveyed entities allocates about 1% of the annual expenditure for marketing costs. For these costs, it is allocated up to 5% of annual expenditures of 10% of the total number of respondents.

Table 5 - Share of marketing costs in the total expenditure structure

Districts	Share of marketing costs in the total expenditure structure									
	no participation		about 1%		1%-5%		more than 5%		TOTAL	
	Number	%	Number	%	Number	%	Number	%	Number	%
West Bačka	4	*36*	2	*18*	2	*18*	3	*28*	11	*100*
Zlatibor	8	*32*	5	*20*	7	*28*	5	*20*	25	*100*
South Bačka	2	*29*	2	*29*	-	-	3	*42*	7	*100*
Kolubara	9	*82*	2	*18*	-	-	-	-	11	*100*
South Banat	5	*71*	2	*29*	-	-	-	-	7	*100*
Mačva	3	*60*	2	*40*	-	-	-	-	5	*100*
Šumadija	5	*45*	6	*55*	-	-	-	-	11	*100*
Moravica	9	*82*	2	*18*	-	-	-	-	11	*100*
Pirot	4	*67*	2	*33*	-	-	-	-	6	*100*
North Bačka	1	*20*	1	*20*	1	*20*	2	*40*	5	*100*
Srem	-	-	5	*100*	-	-	-	-	5	*100*
TOTAL	**50**	*48*	**31**	*30*	**10**	*10*	**13**	*12*	**104**	*100*

Source: Statistical processing of the survey research

It could be optimistic that 12% of the surveyed rural tourism entities invest more than 5% of their annual expenditure in their promotion. However, these subjects of rural tourism are located only in the area of four districts: Zlatibor, South, West and North Bačka.

Table 6 - - Investments in marketing compared to realized revenues

Marketing investments:	Results:	Realized annual revenues (in RSD)					Total:
		to 150,000	to 300,000	to 500,000	to 1,000,000	more than 1,000,000	
– no	Number	16	6	4	0	1	27
	Expected number	9,6	6,5	3,9	2,3	4,7	27,0
	%	59,3%	22,2%	14,8%	0,0%	3,7%	100,0%
– yes	Number	21	19	11	9	17	77
	Expected number	27,4	18,5	11,1	6,7	13,3	77,0
	%	27,3%	24,7%	14,3%	11,7%	22,1%	100,0%
Total:	**Number**	**37**	**25**	**15**	**9**	**18**	**104**
	Expected number	**37,0**	**25,0**	**15,0**	**9,0**	**18,0**	**104,0**
	%	**35,6%**	**24,0%**	**14,4%**	**8,7%**	**17,3%**	**100,0%**

Source: Statistical processing of the survey research

The auxiliary hypothesis is: rural tourism entities that invest in marketing earn higher incomes, i.e. have a better development of rural tourism. For the purpose of proving the auxiliary hypothesis, the realized annual incomes of the surveyed subjects and (no) investment in marketing were crossed. The results of the research obtained by the method of non-parametric statistical - χ^2 (Chi-square) test are presented in table number 6.

The value of the Chi square of the test ($\chi 2 = 12.858$, df = 4, p = 0.012) is statistically significant. Based on the above, it can be concluded that there is a connection between the amount of income and investment in marketing. This confirms the auxiliary hypothesis that higher revenues are generated by rural tourism entities that invest in marketing, i.e. those entities have a developed promotion of their rural tourism product.

Conclusion

The results of the research realized in this paper confirm the main hypothesis that rural tourism in Serbia is underdeveloped. Of the total number of surveyed entities, the largest share are entities that: (a) realize up to 100 tourist nights per year; (b) realize an annual income of up to RSD 150,000; (c) do not plan investments; (d) do not invest in marketing. The auxiliary hypothesis was also confirmed in the research. Rural tourism entities that invest in marketing also generate higher incomes, i.e. have more developed. Therefore, Serbia does not have a developed rural tourism, despite the fact that its territory is dominated by rural areas, that it is an agricultural country, and having in mind that agriculture is a platform for the development of this type of tourism. The reasons for this are numerous, and they primarily relate to problems and limitations in the development of supply, but also to the lack of demand. The consequences are the economic and social decline of rural areas. We believe that the surrounding countries are a good, comparative example for Serbia, in terms of planned development of rural tourism, the importance of associations of service providers, as well as the importance of financial support to the development of this activity, especially in the pre-accession period of European integration.

In order to ensure the balanced regional development of rural tourism in Serbia, it is necessary to form a new agile association of rural tourism service providers at the national level, which should have branches in all administrative districts. In this way, the balanced development of rural tourism would be ensured, but also the balanced rural development, as a precondition for the economic and sociological survival of rural areas. Here, it is especially necessary to emphasize the importance of rural tourism for the diversification and development of rural economies. The priority task of the association should be, in addition to strengthening the network of regional branches, the cooperation with state bodies in order to define regulations, planned documents, as well as modalities of financing tailored to the needs of service providers in rural tourism. The task of this association should be active promotion and sale of rural tourism products, education of existing members, as well as attracting new ones, so that rural tourism in Serbia becomes a model of rural development.

We believe that in order to develop rural tourism in Serbia, it is primarily necessary to adopt a strategy for the development of only this type of tourism, as well as action plans. It is necessary to define standards, establish a national categorization institution, as well as form a register of service providers. Significant investments are needed in transport and communal rural infrastructure. In order to develop rural tourism in Serbia, the financial support of the state is also important. It was significantly represented in the surrounding countries in the pre-accession period of European integration. The surveyed subjects of rural tourism in Serbia, for the most part, have so far provided the invested funds through self-financing, and only partially with the support of state subsidies. In the current period, a competition for funds from the IPARD program is underway. In order to develop rural tourism, it is necessary to provide favorable continuous sources of financing for the development of all segments of the offer.

We believe that in order to develop rural tourism, and having in mind the knowledge about the process of development of this activity in the surrounding countries, which can be our comparative examples, it is necessary to form a new association of rural tourism entities in Serbia. The association should be the initiator of the development of this activity, as was the case in Slovenia. The existing association is engaged in only one activity important for the development of rural tourism. So far, this activity has been the promotion of rural tourism through the site.

Conflict of interests

The authors declare no conflict of interest.

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RESTITUTION OF AGRICULTURAL LAND IN SERBIA - COMPARATIVE LEGAL ASPECTS

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A B S T R A C T

The idea of returning the confiscated property to the previous owners in the Republic of Serbia arose as a process that included all the countries of Eastern Europe and other countries of the former communist system in which mostly state property existed. Restitution is part of the transition process, which implies comprehensive changes in the state, including privatization of the state sector and market operations on the principles of private property, but also as a need to correct the injustice done to former owners of confiscated property. According to Serbian legislation, restitution is obligatory, but in practice it is very difficult and slow to realize, even though this process realizes one of the basic human rights of citizens described in the UN Universal Declaration of Human Rights - the right to free enjoyment of private property. In this paper, the authors analyze the possibilities of returning agricultural land, legal regulations and implemented solutions in practice, on the example of a unit of local self-government, on whose territory there is a state land fund that can be the subject of return.

Introduction

Restitution implies the return of property or rights that have in the past been unjustifiably taken away without adequate compensation from a certain person, group of citizens or an entire class, or ethnic group in countries where certain, significantly different social circumstances previously existed.

The terms "reprivatization" and "denationalization" are used in the same sense. In the legislation and practice of comparative law, the term denationalization, in a broader sense,

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also means the compensation of things and rights that have been taken away from private law subjects and transferred to the property of any other subjects (states, municipalities, agrarian stakeholders, etc.), by implementing any coercive measures of public authority (confiscation, nationalization, expropriation, etc.) in the process of taking away of private property.

In economic terms, denationalization also means privatization, sale of state or socially-owned property to private legal or natural persons. It is a significant process, of modern economic and social development, every country, which is increasingly based on private property, decentralization, deregulation and weakening of the regulatory and managerial role of the state. Denationalization is related to the processes of economic growth and progress, which is based on technological development, globalization and market competition, with the aim of renewing liberal values in economic and social life, and especially to the disintegration of socialist creations and the creation of open market economies. It is commonly believed that the advantages of private ownership are in greater initiative and motivation of private owners for more efficient management and operations as well as in greater mobility of goods, capital, labor, workforce and knowledge. Private ownership extends not only to all commercial sectors but also to areas of service of general interest, which have traditionally been in the sphere of state ownership and management.

In this paper, the authors deal with restitution as a process of returning property taken away to private ownership (primarily in natural form or in the form of compensation expressed in cash) which was taken away on the basis of earlier regulations from the communist period, confiscation and sequestration, agrarian reform and colonization, nationalization and expropriation or even without a legal basis, without fair compensation or in some other similar way (Gower, Kozminski, 1997). In the legal sense, restitution means the establishment of the previous situation in relation to the person from whom it was confiscated, in the way it was before the act of confiscation and refers primarily to the return of confiscated property, ie. in natural form (Jugović, 2009).

The return of property taken away is an issue that is simultaneously included in the process of transition of any post-communist country and, one of the unavoidable issues related to the European integration of a country that is interested in becoming a member of the European Union. But Protocol No. 1. in addition to the European Convention for the Protection of Human Rights and Fundamental Rights, does not create for the signatory states any general obligations or restrictions regarding the restitution of property (right to restitution, scope of return and conditions) taken away from former owners before ratifying the Convention. This issue is left to the states to decide (Judgment of the European Court of Human Rights).

Restitution is a complex issue from the not-so-distant past of the communist period, from a time that included:

- transformation,
- collectivization and nationalization of human consciousness and
- private property.

This idea, regardless of the fact that it was based on the then legally valid normative framework and no matter how much it was realized through official authorities, had an aggressive approach conducted by a state that acted with the strength of its ius empire, degradation of human freedoms and property rights. Therefore, restitution is, in every country where it is implemented, a large state project based on the law. In addition, the real will of the current government is necessary, which not only returns the property to the former owners, but also definitely introduces a new philosophy of private property whose protection, until restitution is carried out, will still be only declarative (Projuris, 2020), on paper only.

Such a point of departure for re-privatization or restitution of property rights was not very promising and carried with it serious legal and political complications. It has also to be remembered, however, that there were several reasons for restitution of property (Surdykowska, 1996):

- ideology and ,,historical justice,, where the new capitalist society based on the principles of private ownership should start, by making good the cardinal sins against private property committed by the communist regimes,
- socialy, which suggested that the building of a new middle class should start by re –building teh old one, or a least a part of it,
- idea that the easiest and the mostnatural way of privatizing and assuring the most effective use of assets was to return the existing property to the original owners,
- a requirement of Europian Union, to comply with the principles of respecting property rights generally accepted in the western world.

The aim of the work and the methodology used

Information and data used for reserch in this paper, which refer to the process of restitution, which included all Eastern countries and part of the countries of Central Europe and other countries of the former communist system in which there was predominantly state property, including the return of agricultural land in the Republic of Serbia, were obtained during a detailed interview with fifty holders of restitution who claimed agricultural land in Vojvodina, on the analysis of legal regulations in Serbia and abroad, on numerous practical examples when returning the land and especially on the List published on the Agency's website.

During the research of the chosen topic, the following methods were used to collect and evaluate relevant information:

- Case studies as a descriptive method, showing that the observed cases can be taken as a typical case, showing that it is possible to return confiscated land of satisfactory quality, which can be concluded based on the existing quantity and quality of state-owned land. Within the presented cases, the authors started from concrete indicators from available public documents on the existence of a sufficient amount of quality state land, pointing out the importance of fair distribution and the consequences of not applying good solutions.

- The comparative method enabled the authors to come to generalizations or new conclusions by comparing the same or similar phenomena or by establishing similarities and differences between them.
- The synthesis method was finally used to summarize the conclusions at the global level as well as at the level of Serbia, developed countries with recommendations for efficient and effective return of agricultural land and its role in creating sources of financing for new owners.

From the analysis of all collected data, it was noticed that there are possibilities for a fairer distribution of land in Serbia, which would benefit both parties in the restitution procedure, the state and the restitution creditor.

Additional data related to foreign markets are the result of many years of research by authors, relevant foreign scientific and professional literature, foreign institutions that play a role in postupcima vraćanja oduzete imovine, analysis of practical examples and publicly available information via the Internet.

The main goal of this paper is to show on the one hand, the possibility of returning agricultural land and on the other hand, law enforcement in practice. The research was conducted on the Serbian market in the period from 2012. to 2020.

The economic and the legal justification for the implementation of restitution is based on the process of including Serbia in the currents in Europe, harmonization of legal and economic frameworks with EU member states, correction of injustice done decades ago and creation of a new / old middle economic class.

The success of the restitution can undoubtedly be assumed based on the reputation and the economic strength of the state, the socially responsible behavior of the state including respect for human rights.

Results of work with discussion

The subject of restitution and the position of the titular in the procedure of returning the taken away property

The subject of restitution are things and rights that in the observed period were taken away by public authorities on the basis of the then regulations, decisions of courts and other authorities, but also without any legal basis taken away from the previous authorities. The Law on Restitution of Confiscated Property and Compensation of the Republic of Serbia distinguishes between:

- natural and
- financial restitution.

Which solution will be applied in a specific case depends on the legal solution, which may include the return of confiscated real estate and movables - natural restitution, or reduced exclusively to financial compensation, then we are talking about financial

restitution (Samardžić, 2012). In the case of financial restitution, the state gives compensation to the holder of restitution instead of confiscated property in the form of government bonds of the Republic of Serbia and in money, in accordance with this law.

The holder of the right to restitution of property may claim the taken away property right in the legally prescribed procedure, only when the conditions prescribed by the state under which this "legitimate expectation" can be realized, occur, because the property does not exist until a claim can be established over it. (Decision of the Constitutional Court of Serbia No. I-Uz.119 / 2008 of 20.04.2011).

This follows from the provisions of the Constitution of the Republic of Serbia, which does not explicitly determine the right to return taken away property, nor the obligation of the legislator to regulate restitution, and such a right is not guaranteed by the European Convention for the Protection of Human Rights and Fundamental Freedoms. The Convention guarantees the holder the right to unhindered enjoyment of property, i.e. restriction of property rights and other property rights on any basis without compensation, which includes the prohibition of confiscation. However, since the Convention cannot be applied retroactively, it therefore does not establish the obligation of the state to eliminate violations of property rights that occurred before its entry into force. The Convention defines property, according to which property includes not only the right of ownership of immovable and movable property and investments in it, but also a claim based on which there is a legitimate expectation that the effective enjoyment of a property right can be acquired. That legitimate expectation is in fact an expectation from the restitution process.

The expectation that previously existing property rights will be recognized, which have not been able to be used effectively for a long time, does not constitute property within the meaning of the provisions of the said Convention. In order to exercise the right under the mentioned provisions of the Convention, it is necessary to have "at least a legitimate expectation" that a certain property right can be realized, and a legitimate expectation exists only when the contracting state prescribes the conditions under which that expectation will be realized. However, the signatory states to the Convention are not limited in prescribing the conditions under which they will return the property, which was transferred to them before they ratified the Convention (European Convention for the Protection of Human Rights and Fundamental Freedoms, 1950). The Republic of Serbia has prescribed by law the conditions under which it will return property to the right holders in the restitution procedure. This means, for example, if a request for restitution of property is submitted in accordance with the law, and it is necessary under the same law, as a prescribed condition, to rehabilitate the previous owner, the condition for restitution of property or compensation is acquired only when the rehabilitation decision becomes final.

In the practice of the Republic of Serbia, the question has been raised whether it is possible to speak of a violation of the prohibition of discrimination when persons who are in significantly different situations and exercise the right to return property and

compensation under different laws. In order to resolve that issue, an initiative was launched at the Constitutional Court of Serbia.

The Constitutional Court has ruled that the Constitution of Serbia allows the possibility of pre-existing social or state property created by the original method of acquiring property - an act of the state (law, by-law or individual act) may, by an act of the state, in case of restitution, change the form of ownership by law, i.e. that it may be returned to private ownership, under the conditions prescribed by the law governing restitution. From this it can be concluded that there is a constitutional authority that the law governing restitution may regulate the conditions, manner and procedure of returning confiscated property and compensation, whereby it must be borne in mind that the property was confiscated on the basis of the constitution and regulations, were in force at the time the property was confiscated. This means that there was a legal basis for such confiscation of property, so in that sense it is logical in the current law that regulates the possibility to return confiscated property in natural form, or to provide compensation for confiscated property, as which is determined by the provisions of the existing law that regulates the return of confiscated property and compensation. The initiative for constitutional review in this sense was initiated due to the fact that, in the opinion of the initiator, persons entitled to return property under this law are placed in an unequal position in relation to other categories of persons exercising the right to return property under other regulations (Decision of the Constitutional Court of Serbia No. IUz-429/2011 of 18 April 2013).

In assessing the violation of the principle of non-discrimination, the understanding of the European Court of Human Rights may be taken into account, on the basis of which the right to the enjoyment of rights and freedoms provided by the same Convention is violated when States parties treat in similar situations, without stating objective and reasonable justifications (European Convention for the Protection of Human Rights and Fundamental Freedoms, 1950).

However, based on the opinion of the European Court of Human Rights, the principle of non-discrimination is also violated in the case when states do not treat people who are in significantly different situations differently without objective and reasonable justification. Based on the above, it can be concluded that persons exercising the right to return property under other regulations are in significantly different situations regulated by these regulations, such as, for example, in the case of return of agricultural land, compared to persons exercising the right to return property or compensation under the law governing the return of confiscated property and compensation, and based on the above, the Constitutional Court considers that these categories of persons are in an unequal position, because, on the contrary, equal treatment in different situations would mean substantial inequality in exercising rights, in the process of restitution of property and compensation (Decision of the Constitutional Court of Serbia No. IUz-429/2011 of 18 April 2013).

Based on the above, it can be concluded that the holder of natural restitution and the holder of monetary compensation are not in the same position, but at the same time an explanation is given for the stated difference. In this regard, there is an objective and reasonable justification for the stated difference in the position of these two categories of former owners, which is based on the purpose or status of a certain real estate.

The position of the Constitutional Court of Serbia is based on the logic that the Constitution of Serbia allows the possibility that the previously taken away property can, again by an act of the state, in this case by law, change the form of that property, i.e. that it may be returned to private ownership, under the conditions prescribed by law. As stated above, this means that there is a constitutional authority that the law governing the return of taken away property regulates the conditions, manner and procedure of returning taken away property and compensation for taken away property, bearing in mind that the property in question was confiscated on the basis of previously valid constitutions and regulations, which means that there was a legal basis for such confiscation of property, whereby it is a matter of the legislator's determination to limit this right in the sense that it does not include the right to return fruits and compensation for loss of profit (Decision of the Constitutional Court of Serbia No. IUz-462/2011 of 11 April 2013).

The explanation for the above is based on the fact that the Constitution does not recognize the principle of equality as a general, abstract concept that applies to all legal entities in every legal situation, but guarantees equality within the same category of legal entities, i.e. the same type of rights. Based on the above, it can be concluded that the holders of the right to restitution are not in the same position:

- the former owner to whom the property is returned in natural form and
- the former owner who will receive compensation for the taken away property under the conditions and in the manner provided by this law.

But, in the opinion of the Constitutional Court, there is an objective and reasonable justification for the mentioned difference in the position of these two categories of former owners. It is a fact that certain real estate for objective reasons, arising from the purpose or status of real estate, in cases specified in the law governing the return of confiscated property and compensation can not be returned, and in these cases the former owner is entitled to compensation for confiscated property (Decision of the Constitutional Court of Serbia No. IUz-462/2011, April of 11th, 2013).

Restitution in Serbia and post-communist countries

It is indisputable that the violation of property rights was committed after the end of the Second World War, on the territory of the former Yugoslavia as well as in other countries of the communist regime, mainly the countries of Eastern Europe, on the basis of legal regulations of the then authorities or individual acts. Some of those states, later entered the process of transition, which meant a change in the state system, and decided on the path of European integration or are already members of the EU. Therefore, it was necessary to

eliminate the injustice of violating the property rights of the previous owners, committed during the rule of the communist system. Some countries have already carried out the restitution procedure with more or less success, in a shorter or longer period, which depends not only on the adopted regulations but also on the real political and social will, which is reflected in the consistent implementation of constitutional principles and principles of the constitution and laws. Some countries, such as Serbia, are still conducting the restitution procedure, and the most problems are in the procedures whose subject is the return of agricultural land. According to agrarian analysts, there is enough state land to complete the process of restitution of agricultural land, but the restitution of agricultural land does not go in favor of the state (The Fate of Confiscated Property, Gulan, 2015). The best solutions cannot lead to results in practice if they are not implemented consistently, i.e. if not everyone is equal before the law and the constitution. This brings us back to the rule of law, which is a precondition for all changes and realization of individual rights of restitution holders.

The restitution procedure, in its essence and legal sense, implies a return to the situation from more than six decades ago. This procedure is in itself controversial and brings with it many problems and conditions prescribed by states, such as:

- obtaining extensive documentation that needs to be attached to the request for restitution of property,
- it is often necessary to rehabilitate the former owner of the confiscated property, which is, as stated, a condition for the return of property,
- and in Serbia it is envisaged that the current law on property restitution and compensation does not apply in Kosovo and Metohija.

During the implementation of restitution in other Eastern European countries, two main models were created:

- restitution in rem (restitution in natural form, i.e. the return of the same thing in its natural form) Legally speaking, natural restitution is the only proper and just form of restitution because it does not burden citizens with additional fees and the state has no additional financial costs. Also, it is not discriminatory and has been implemented in most countries in transition. Natural restitution is also a recommendation of the European Union and
- direct, mostly financial compensation through monetary compensation.

In addition to the above, a large number of states allow the combination of these two forms of return of confiscated property. In the countries of the European Union, there is no prescribed mandatory model of restitution, but different solutions are applied in different member states, such as the exchange of property in Slovenia. Therefore, most post-communist countries in Europe decided to combine these two models (Sutela, 1998), which was accepted by the Republic of Serbia by adopting the current law. Most countries initiated restitution proceedings in the 1990s. Among the first were Slovenia, the Czech Republic, Slovakia and Hungary. Then Bulgaria (1992), Germany, for East Germany (1994), Romania, Croatia and Poland (1996), Macedonia (1998), Montenegro (2002), Albania (2004), and the Republic of Serbia significantly later, in 2012 (IPF,2020).

The extent of restitution titular compensation varies from state to state. The amount of compensation certainly depends on the political will of the state, but it is also conditioned by the economy of one state. In this regard, the countries in the process of transition, in order not to pay compensation in cash, decided to issue bonds maturing in a certain period of time, after the completion of the procedure of determining the rights of the restitution holder upon the submitted request. In Serbia, unlike most countries, this procedure takes an unreasonably long time. Many requests submitted to the competent institution with the beginning of the application of the law have not been resolved yet. Germany has set the compensation period for its eastern part at five years, and Macedonia at thirty, but both countries have provided for the payment of compensation in debt securities, with a country with stronger economic power, such as Germany, can pay off its obligations in a shorter period of time (HERETICUS, 2020).

In some countries, there is dissatisfaction of restitution holders because they believe that not everyone is in the same position, that some receive property of higher value and some less, proceedings are conducted for too long and there are numerous disputes before the International Court of Human Rights. Although Restitution removes the moral injustice done decades ago, it may not be ideal, but it is very important that it be fair and effective. It is also fair that the issue of restitution does not drag on for years, as it has in Serbia or for decades, as is the case in some countries. For example, in Romania, there are many dissatisfied holders who have initiated court proceedings due to inconsistent application of the current law. (Ceppei, 2020) or Poland, which decided to limit the compensation to 20% of the value of the property. On the other hand, there are countries in Central Europe that have carried out the restitution process faster and more efficiently, such as the Czech Republic, which has returned everything in natural form and where companies have already been built on confiscated land, the owners have received appropriate value of share capital in those companies. In Slovakia, restitution also had the priority of repossession of property in natural form, while Hungary resolved the issue in two years during the 1990s, opting for limited compensation. In Slovenia, restitution has been completed, unlike in Croatia, which has problems with the return of large farms. There are still unfinished proceedings in Macedonia (WJRO, 2020) and in Bulgaria there is dissatisfaction due to compensation in bonds. Montenegro is still delaying the process of returning taken away property. (IPF, 2020).

Restitution of agricultural land in Serbia with the example of one local self-government unit

The Law on the Return of Confiscated Property and Compensation stipulates of Serbia, that agricultural and forest land and forests, which were taken away by the application of previous regulations, are returned to the holders of restitution. If the taken away agricultural land was the subject of consolidation or land consolidation carried out after the confiscation, the former owner has the right to return the land obtained from the consolidation estate for that land (Law on Return of Confiscated Property and Compensation).

The bylaw establishes the obligation of the Agency for Restitution (hereinafter: the Agency) to, on the basis of its data on claims from the submitted requests of restitution right holders, inform the Agricultural Land Administration (hereinafter: the Administration) about the areas of agricultural land claimed, in cadastral municipalities in which the consolidation procedure was carried out. Based on that, the Administration is obliged to determine state-owned cadastral parcels in an area that will be sufficient to complete the procedure of property restitution, and which may be subject to restitution in terms of the Law and this Regulation (Regulation on criteria for determining the area of agricultural and forest land in the process of returning taken away property).

The stated data, the List of determined cadastral parcels in state ownership that can be the subject of return in the procedure of return of confiscated property (hereinafter: the List) must be accurate, publicly published on the website of the Administration and the Restitution Agency. The Agency is obliged to update them daily, so that all interested parties have information about the plots that are intended to be returned in the restitution procedure, which have already been returned during the procedure and which are left for return.

At the same time, there can be no cadastral parcels on the List which, at the time of entry into force of the decree:

- leased on the basis of consent to the investment plan given by the competent commission in accordance with the regulations governing the priority right to lease agricultural land;
- leased on the basis of ownership of infrastructure facilities;
- leased for more than ten years.

By the way, in the restitution procedure, most problems were and still are about the return of agricultural land. There was much more state-owned land in all local self-government units in the whole of Serbia than land claimed in the restitution procedure. The Administration has compiled a list of cadastral parcels intended for return in the restitution procedure. But large areas of quality agricultural land are exempt from restitution. A number of restitution holders were given back quality land in one piece, and a large number of the remaining ones were offered encumbered land or fields belonging to low-quality land, small plots of land below or around one hectare, which are not next to each other, which no one wants, due to which led to a delay in the procedure of returning agricultural land (Agronews, 2020) and initiating numerous court proceedings.

Due to the insufficient allocation of the fund for the return of the land, the holders of restitution were put in an unequal position. Those who are offered inadequate land believe that they have been damaged, that the right to fair restitution and the principle of equality have been violated, and have opted for court proceedings because the state cannot return quality to some and bad to others, and there is a sufficient fund of state land that may be subject to restitution.

In terms of determining the possibility of returning agricultural land in the restitution procedure, the authors analyzed the state of the existing state fund of state land in relation to the amount claimed in the restitution procedure in municipality Ruma in Vojvodina. In 2016, according to public data published on the website of the Administration, there were a total of 7,207,4594 hectares of arable agricultural land in the observed local self-government. Based on the Agency's public data, restitution holders are claiming 1,248,1484 hectares, representing only 17.32% of the total available state fund. In all neighboring municipalities, the percentage of claims for restitution titular was approximate, so that in Ruma, there is enough quality state land to return in the restitution procedure.

Notwithstanding the above, some of the restitution holders received quality agricultural land and others, with the threat of rejection of the request for land return by the Agency, were forced to take low-quality land, in several small plots, separated from each other, or to have long disputes with state. This obviously discriminated against a large number of restitution holders. In addition to the above, the proceedings are taking too long, which violated the right of the restitution holder to resolve their claims within a reasonable time, which is guaranteed by the Constitution of the Republic of Serbia.

The authors investigated the case of seventeen heirs who claimed agricultural land from 4 of their ancestors, who were deprived of quality agricultural land in a cadastral municipality in JLS Ruma. Since there was no land to be returned in that cadastral municipality (except for 4 ha of class IV pastures, which no one wanted to take until then due to poor position and quality), the heirs were offered about 300 plots, mostly small or slightly above one hectare, low-quality lands from III to VI class. The surveyor, whom the Agency chose to do the expertise, said that the best piece of land of all that was the one when "no one wanted".

Since the restitution procedure lasted too long (seven years) outside all rational legal deadlines, and the heirs were offered several small low-quality plots or rejection of the request for returning land (which would be illegal but would put the heirs in a situation to conduct years-long proceedings), the heirs opted for a less bad combination: to take 24 small, distant plots and to sue for damages.

At the basis of such confrontations between the state and the titulars of restitution obviously lies the lack of will of the state to return quality agricultural land, when there is enough for all the titulars of restitution.

Conclusion

The restitution of property confiscated from previous owners in the post-World War II period in the countries of the communist system, Eastern and Central Europe, had two goals: it was part of the overall reforms of those countries that abandoned the communist social order and redress the injustices done to previous owners. Economically stronger countries and those with a regulated legal system have implemented restitution in a shorter time, with fair economic compensation, while in other countries, this process has

taken too long, with the dissatisfaction of restitution holders. In doing so, all countries have envisaged similar models for the return of confiscated property, including return in nature (return of confiscated property or return of other property of the same type) and / or financial form (monetary compensation, bond issuance or acquisition of state-owned shares).

In Serbia, the Law on Restitution of Confiscated Property and Compensation prescribes two basic principles in restitution proceedings: the principle of priority of restitution of property in nature in all cases where that property exists and may be subject to restitution and the principle of protection of the acquirer. The taken away will be returned to the ownership and state to the former owner or his legal successor, and only if the return of the property is not possible, the former owner or his legal successor is entitled to compensation.

Also, the restitution process in Serbia began more than two decades after the privatization process began. This unjustified discrepancy greatly influenced the legal solutions, and then their implementation in practice. The analysis of regulations, and then the practice that took place on the basis of those regulations, indicates obvious contradictions, inconsistencies and legal gaps in the normative part, which inevitably contributed to the different position of subjects in the restitution procedure, which in many cases has noticeable elements of discrimination (Veselinov, 2017). Therefore, substantial changes in legislation should be made and the injustice done to numerous restitution holders should be corrected, which would also suspend numerous proceedings before the courts.

For the implementation of restitution in Serbia, it is not enough just to pass a law on property restitution and compensation. It has been shown that it is necessary to take a number of essential measures to achieve the necessary political and social consensus in order to fairly return confiscated property, especially when returning agricultural land, in the form of substitution, determination and allocation of agricultural land for restitution, precise definition of obligations of state bodies and achieving synergy of the state apparatus in the field of restitution, which, when it comes to returning agricultural land, has not shown satisfactory results.

Neglect, adoption of unfortunate solutions, or delayed implementation of adequate measures leave large groups of the populations (particularly peasants) alienated, and enhance further political polarization of the post – communist societies.

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Conflict of interests

The authors declare no conflict of interest.

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ENVIRONMENTAL PROTECTION AS A FACTOR OF AGRICULTURAL DEVELOPMENT IN THE REPUBLIC OF SERBIA

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ABSTRACT

Public concern about the environmental impact of economic activities has significantly increased around the globe in recent years. Within the scope of unlawful acts, environmental delicts are among the most serious ones in terms of environmental impact, the consequences of which directly affect the quality and development of agriculture as the main branch of economic activity.

The issue of environmental protection and liability can be approached from different perspectives, and the focus of the present research will be on the analysis of environmental delicts committed by legal entities, taking into consideration the importance and role of these entities in agriculture. In addition to general assumptions on legal regulation of the liability of legal entities, the authors also presented the results of research on legal entities reported, charged, and convicted for environmental delicts in the Republic of Serbia in the period from 2010 to 2017, with a special emphasis on the analysis of results obtained in the above-mentioned research areas for the territory of AP Vojvodina.

Introduction

A healthy and preserved environment is an existential human right. Environment, observed in relation to other issues, is almost at the top of priorities of modern countries and the international community. Therefore, environmental protection is recognised as an issue that needs to be regulated in terms of enactment of laws (Drenovak-Ivanović, 2015), but it is also necessary to develop an awareness of the preservation of the environment since a healthy environment is crucial for human existence and satisfaction of their needs, primarily in view of agricultural production, which is in a direct cause-effect relationship with the environment.

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Agricultural impact on the environment can be observed through changes occurring as a result of the mutual influence of agriculture, as a branch of economy, and the environment, as a setting in which agricultural activities are performed. The need for a healthier environment and evident negativities caused by current conventional agricultural practices, i.e. factors of ecological crisis: urbanisation, industrialisation, population growth, expansion of cities, and other settlements, have led to the endangerment of land, particularly agricultural land (Đorđević, 2018).

The development of industry in the last two centuries, and especially in the second half of the last century, has been quite rapid and without a strategy that would have taken into consideration all negative consequences of such development. Due to irresponsible behaviour of individuals, and especially corporations, countries with economies largely based on agricultural development are today faced with major environmental issues that are not only reflected in negative impact on trade and export, what many consider to be the only reason tore act, but also in endangering people's health and in negative impact on agriculture as the primary sector of economy.

Public concern about the consequences of economic activities for the environment has significantly increased around the globe over the past years. The growing problems of environmental pollution have contributed to raising awareness of the need to implement measures that enable sustainable development so that different pillars of society can find a balance between economic growth and social interest in preserving a healthy environment. Major ecological disasters have prompted a global discussion about responsibility of companies and emphasised the necessity of their involvement in the process of addressing key questions related to environmental protection, raising a number of questions regarding liability for environmental damage. It is not necessary to emphasise the significance and importance of environmental protection, although it has not been achieved at the level that we have "somewhere" drawn on the basis of existential and cultural standards and the development of social consciousness (Krstinić et al., 2017).

The level of the environmental contamination ranges from the mildest forms within tolerance limits, to the worst forms with the highest level of contamination, where the consequences are manifested in a form of environmental offense. Environmental crime directly endangers the environment, and indirectly human life and health. This form of crime, compared to other forms, is far more dangerous since it can destroy the national economy and lead to the spread of various diseases and the extinction of rare species of flora and fauna (Subošić et al., 2012). However, despite the fact that environmental crime poses a growing threat, it remains a low priority for the international enforcement community (Rice, 2008).

Threats to the environment through criminal offenses are a growing problem that causes serious damage. In recent years, the number of threatening actions has multiplied. In addition, perpetrators are prone to this type of crime because of the possibility of realising large profits with minimal risk of detection and prosecution, especially when it comes to criminal offenses with elements of organised crime of international

character (Subošić et al., 2012). Environmental crime is a serious international problem that has various forms, which are not limited to air, water, and soil pollution, or the extinction of plant and animal species, but also apply to actions accelerating climate change, drastic reduction of fish stocks, devastation of forests, etc. to the destruction of natural resources in general (Pisarić, 2011).

Environmental protection is a fundamental precondition for the development of agricultural production, which involves directing and controlling biological processes of growth and development of plants and animals. At the present level of development of productive forces, the relationship between agriculture and ecosystem equilibrium is gaining importance. So far, environmental, economic, and social imbalances have affected agricultural development and can have a negative impact on future developments (Vujičić et al., 2008).

The Census of Agriculture on the territory of the Republic of Serbia was carried out from 1 October to 15 December 2012 according to the Law on the Census of Agriculture 2011 (Official Gazette of RS, No. 104/09 and 24/11). The Census of Agriculture that took place in 2012 collected data on family agricultural holdings and holdings of legal entities and entrepreneurs according to the forms of their organisation, available land, and data on agricultural land per category of its use.

Analysing the ownership structure of agricultural holdings based on the 2012 Census of Agriculture data, we can present several basic characteristics of family agricultural holdings and holdings of legal entities and entrepreneurs, which were crucial for conducting this research:

- Available land amounts to 5,346,597 ha and makes up 68.9% of the total territory of Serbia (7,759,200 ha);
- Family agricultural holdings are dominant in the total number of holdings (99.4%);
- Holdings of legal entities and entrepreneurs are minor in number (0.5%) but significant in terms of utilised agricultural land (17.8% of the total agricultural land), and especially in terms of the average area of holdings (204.12 ha), and are important production and economic factors of agricultural development in Serbia.
- Regional distribution of agricultural land is of importance, which is significantly above average and amounts to 78.5% in the region of Vojvodina, while in the richest region of Vojvodina it amounts to over 78.3% (Ševarlić, 2015).

These results contributed to paying special attention to the research of the economic activity of legal entities, considering the fact that every economic activity can produce certain environmental damage through the execution of certain unlawful acts - economic offenses against the environment. Furthermore, due to the significant role of the region of Vojvodina in the area of agricultural activity, particular attention will be devoted to the research of economic offenses against the environment in the region of Vojvodina.

On liability of legal entities

Apart from natural persons (adults and juveniles), legal entities also appear as perpetrators of unlawful acts (misdemeanours, economic offences, and crimes). For these reasons, criminal legislation of modern countries regulates the liability of legal entities for crimes, apart from already established liability for misdemeanours and criminal offenses. Such liability of legal entities is specific regarding its basis, legal nature, elements, and other characteristics, as well as due to the special system of criminal sanctions for this kind of perpetrators of crimes. Since this is a relatively new branch of law that still does not have legal independence in a large number of countries, but is contained in provisions of basic criminal law, there is still no generally accepted name for it; however, it is most commonly referred to as "corporate criminal law".

Corporate criminal law is part – a segment of the classical criminal law. It is a system of regulations defining the concept, elements of liability, a system of criminal sanctions and procedure for their imposition and execution against legal entities as perpetrators of crimes, and a system of crimes that may be committed by these parties with the aim of suppressing acts violating or endangering protected values; or it is a set of legal norms that determine the content and scope of a state's authority to punish legal entities, where the basic premise for the application of these norms is a specific behaviour that is defined as a crime (Jovašević, 2012).

The idea of imposing sanctions to legal entities for criminal offences, with simultaneous punishment of the responsible party, appears as a consequence of the emergence of a form of crime that cannot be prevented by punishing an individual; however, suspension of a legal entity's operations is a very effective measure. Earlier, there was an opinion in legal science that a legal entity cannot be the subject of a criminal offense, primarily due to the existence of the principle of subjective individual responsibility (*nullapoena sine culpa*) and the unacceptability of collective punishment.

In theory, there are three views on the criminal liability of legal entities. *The first view* is that there is neither criminal nor any other liability of a legal entity. *The second view* is that there is no criminal liability of a legal entity, but there are other forms of criminal liability - liability for misdemeanours or economic offenses (Šuput, 2009). In Serbian law, the second of the above three positions has long been accepted. The regulations defined liability of a legal entity for misdemeanours and economic offenses, but not for criminal offenses. Only when the National Assembly of the Republic of Serbia passed the Law on the Liability of Legal Entities for Criminal Offenses (hereinafter: LLLECO) on October 27th, 2008, was this type of liability introduced into our law (Official Gazette of the RS, 97/2008).

A legal entity may also be liable for criminal offenses defined in a special part of the Criminal Code and other laws if the conditions for liability of a legal entity regulated by this Law are fulfilled. The Republic of Serbia, the Autonomous Province and a unit of local self-government, i.e. state bodies and bodies of the Autonomous Province and units of local self-government, cannot be held liable for a criminal offense. Other legal

entities entrusted by law with the exercise of public authority cannot be held liable for a criminal offense committed in the exercise of public authority.

Delictual liability of a legal entity is sanctioned by the Misdemeanour Law Official Gazette of the RS, 65/2013, 13/2016, 98/2016, 91/2019 and 91/2019), Companies Act (Official Gazette of the RS, 36/11, 99/11, 83/14 – other law, 5/15,44/18, 95/18 and 91/19), Law on Liability of Legal Entities for Criminal Offenses, and Criminal Code (Official Gazette of the RS, 85/05, 88/05, 107/09, 111/09, 121/12, 104/13, 108/14, 94/16 and 35/2019). Delictual capacity is the ability of a legal entity to be liable for causing damage. It can be objective, if a legal entity is liable for damage caused by dangerous situations or activities, and it can be subjective if a legal entity is found guilty of a criminal offense.

Taking into consideration that a legal entity is in all respects equal with a natural person in terms of misdemeanour liability, it is also subject to the influence of the Misdemeanour Law in terms of delictual liability. Sanctions for misdemeanour liability of legal entities prescribed by the law are: punishment, admonition, and protection measures.

The term "economic offence" was introduced into our law system through the Law on Economic Offences from 1954 and its significant theoretical development can be observed in the later period. Currently, effective Law on Economic Offences (Article 2, Paragraph 1) prescribes that "economic offence is socially harmful violation of regulations on economic and financial operations which has caused or may have caused severe consequences and which is identified as an economic offence by a regulation of the competent authority". Differences can be observed when misdemeanours are compared to economic offences. These differences are reflected in the area of protection so that almost all areas of life and work can be protected by misdemeanours, while economic offences are solely related to economic and financial activity. Economic offenses are considered socially harmful acts, while misdemeanours produce harmful consequences and are not as socially harmful as economic offenses. Therefore, the main difference between an offence and a misdemeanour emerges from the quantitative differentiation of social threat (Jovašević, 1997). Sanctions that may be imposed against a legal entity in the economic criminal proceedings differ from criminal sanctions since the type of liability itself is determined in a different manner. It is necessary to identify objective liability of legal entities and subjective liability of natural persons. Types of sanctions in economic criminal proceedings are: fine, probation, and protection measures. Fine is the only punishment in this process.

In line with the purpose of the paper presented in the abstract, the remaining part of the paper will be focused on the research and results of the research on delictual liability of legal entities for economic offences committed in the field of protection of the environment used for agricultural activities, the mutual dependence between which is important for future development.

Clarifications of methodology

Results presented in this paper are obtained by analysing the content of available and relevant reports of the Statistical Office of the Republic of Serbia, within which data were identified and entered into tables specially created for this research, and in which statistical indicators of filed reports, charges and convictions of legal entities for committing economic offences in the area of environmental protection in the period from 2010 to 2017 in the territory of the Republic of Serbia were shown. The research results section also contains a tabular presentation of the aforementioned delicts committed by legal entities in the territory of the Autonomous Province of Vojvodina in the same period.

The data were obtained on the basis of statistical research conducted in the observed period and are related to the reported legal entities against whom: the proceedings for the economic offence were completed, criminal charges were dismissed or indictment was filed; in addition, the data are related to accused responsible persons and legal persons against whom the proceedings for the economic crime were completed with a decision by which: the procedure was discontinued or suspended, the indictment was dismissed or rejected, a person was released from punishment, as well as to responsible and legal persons who have been declared liable with or without a sentence imposed.

Data sources

Taking into account general characteristics of environmental crimes and delicts, there are significant limitations and shortcomings in reality regarding committed offences; however, all the data on legal entities that committed economic offences contained in the publications of the Statistical Office of the Republic of Serbia were used for analysis. These data were obtained on the basis of statistical research conducted within regular research of the Statistical Office of the Republic of Serbia and were published as part of annual reports publications: "Responsible and legal entities - perpetrators of economic offenses" for the years of 2010, 2011, 2012, 2013, 2014, 2015, 2016 and 2017.

Scope

The statistical surveys on perpetrators of economic offenses include all legal entities reported to have committed an economic offence and against whom the proceedings were completed, both in a competent public prosecutor's office and in a competent court. Thus, the statistical surveys cover the complete jurisdiction of public prosecutor's offices and courts over criminal offences in the territory of the Republic of Serbia.

Research results

Within this section, the results of the conducted research are presented, divided into three parts for ease of presentation: the *first* part analyses the filed reports against legal entities for environmental delicts; the *second* covers charges and, in the end, the *third* part analyses convictions of legal entities.

In addition to the general characteristics analysed in this paper, it is significant to mention the quantitative characteristics of environmental crimes (scope and participation of all categories of perpetrators, i.e. natural persons and legal entities) and their relatively small share in the total number of committed crimes. Thus, in the research that was conducted and which investigated the share of environmental crime in the total number of crimes in the Republic of Serbia for the period from 2006 to 2010, it was concluded that the share of these delicts was from 1.85% (in 2007) to a maximum of 2.12% in 2010 on average (Subošić et al., 2012).

Reports for economic offences against legal entities

In the conducted research, the data were collected on economic offenses of legal entities for environmental crimes committed in the period from 2010 to 2017. In order to present the results, tables were produced with the collected data. Data on the number of filed reports for economic offences of legal entities on the territory of the Republic of Serbia as well as on the territory of the region of Vojvodina are shown in Table 1.

Table 1. Statistical representation of reports against legal entities for economic offences in the area of environmental protection for the period 2010-2017

		2010	2011	2012	2013	2014	2015	2016	2017
REPORTS Total		**100**	**100**	**34**	**85**	**94**	**70**	**32**	**58**
Party filing the report	Inspection	78	75	26	41	66	54	23	24
	MIA	-	1	1	3	1	3	-	1
	Public prosecutor	-	-	-	-	1	-	-	-
	Other	22	24	7	41	26	13	9	33
Region of Vojvodina	**Total**	**26**	**30**	**11**	**15**	**14**	**10**	**9**	**15**
	Inspection	25	28	10	14	10	6	7	9
	MIA	-	1	1	1	1	1	-	1
	Public prosecutor	-	-	-	-	-	-	-	-
	Other	1	1	-	-	3	3	2	5

By analysing statistical data for 2010, 2011, 2012, 2013, 2014, 2015, 2016, and 2017, we can conclude that the largest number of reports was filed in 2010, 2011, and 2014 and that there is an evident decrease in such reports in the succeeding years. When it comes to the party reporting an economic offence to a legal entity for a committed delict in the field of environmental protection, the largest number of reports according to jurisdiction was filed by inspection bodies, while a negligible number of reports (only one in 2014) was filed by a public prosecutor in the observed period, while, at the same period, public prosecutor did not file a single report for an economic offence against a legal entity in the region of Vojvodina.

From the statistical data collected by the Statistical Office of the Republic of Serbia, it can be concluded that there is a certain disproportion in the quality of prosecution for economic offences of legal entities for delicts against the environment. This disproportion is reflected in the difference between the number of filed reports, the number of charges, and the number of convicted legal entities for the said delicts in the observed period.

If we analyse the collected data statistically, we can observe a disproportion individually for each year. Thus, for 2011, the difference between the number of filed reports for the economic offence of a legal entity and the number of accused legal entities amounts to 30%, while the same difference in relation to convicted entities is 54%. The situation is similar for 2010, 2014, and 2015. This occurrence of disproportion between the number of reports, charges, and, in the end, convictions for perpetrators, is referred to in the criminological literature as "the crime funnel". The reasons for this situation may certainly be different, but as stated by other authors of research papers related to the analysis of delicts against the environment, the most common reasons for this disproportion between the number of filed reports, the number of defendants, and finally the number of convicts are incomplete reports in these cases, especially when parties filing a report are citizens or non-governmental organisations and deficiencies in the evidence material (Krstić, 2011).

The collected data indicate a large difference between the number of economic offenses filed in the activities of legal entities. Thus, most often reports are filed for economic offences in the activities marked as "processing industry", then "wholesale and retail trade, repair of motor vehicles, motorcycles, and items for personal use in the household" as well as "traffic, storage, and communication".

A similar situation applies to the analysis of the results collected for reports, charges, and convictions of legal entities in the region of Vojvodina in the observed period. The collected data also show a large disproportion of the number of filed reports in relation to the number of charges and convictions. The tendency of reports reduction is also present in the region of Vojvodina, which is the case on the entire territory of the Republic of Serbia, based on the exhibited data. So, for instance, in 2010 and 2011 there were 26 i.e. 30 reports filed, while in the last year of the observed period (2017) there were only 15 reports, which is almost 50% less.

Charges for economic offences against legal entities

The first level of narrowing the so-called "crime funnel" – in the case of legal entities for delicts against the environment is present in the second segment of the procedure, i.e. in the phase of pressing charges.

Analysing the statistical data for 2010, 2011, 2012, 2013, 2014, 2015 2016, and 2017, we have come to the conclusion that, in relation to the number of filed reports, generally it came to a significant reduction up to one third. So, in 2010 the number of charges was smaller by 33%, i.e. it amounted to 67 out of 100 filed reports. This trend continued next year, as well as in other years in a milder ratio.

Table 2 shows the results that refer to the number of charges against legal entities for the territory of the Republic of Serbia, as well as for the region of Vojvodina.

Table 2. Statistical representation of charges against legal entities for economic offences in the area of environmental protection for the period 2010-2017

		2010	2011	2012	2013	2014	2015	2016	2017
CHARGES Total		**67**	**70**	**76**	**62**	**66**	**49**	**66**	**45**
Type of decision	Procedure suspended	12	20	9	6	6	5	13	3
	indictment dismissed	-	-	-	1	-	-	-	-
	indictment rejected	2	3	4	1	3	2	2	2
	released from accusation	1	1	3	1	1	1	5	2
	declared liable	52	46	60	53	56	41	46	38
Region of Vojvodina	**Total**	**13**	**27**	**21**	**19**	**14**	**19**	**15**	**20**
	Procedure suspended	6	6	3	1	2	3	1	1
	indictment dismissed	-	-	-	-	-	-	-	-
	indictment rejected	1	3	2	-	2	2	1	1
	released from accusation	-	-	2	-	1	-	1	1
	declared liable	6	18	14	18	9	14	12	17

Convictions for economic offences against legal entities

If we focus on the analysis of the final outcome of the procedure, i.e. on the convictions of legal entities for committed delicts in the area of environmental protection, we come to the "narrowest part of the crime funnel" where the disproportion is most obvious. Thus, observed according to the number of filed reports, the number of convictions of legal entities was reduced by half on average, and even more than half in some years (as is the case, for instance, with 2011 when the difference between the number of filed applications and the number convictions was as high as 54%).

The statistical representation of the research results for the number of convictions, the type of conviction as well as the fine of legal entities for the territory of the Republic of Serbia is given in Table 3.

Table 3. Statistical representation of convictions of legal entities for economic offences in the area of environmental protection in the Republic of Serbia for the period 2010-2017

		2010	2011	2012	2013	2014	2015	2016	2017
CONVICTIONS Total		52	46	60	53	56	41	46	38
Conviction	Conditional	43	36	58	43	46	36	37	31
	Unconditional	8	10	2	9	4	5	8	7
Fine	more than 3.000.000	-	-	-	-	-	-	-	-
	from 600.001 to 3.000.000	3	2	6	4	3	5	4	-
	from 300.001 to 600.000	4	6	16	16	10	10	10	6
	from 15.001 to 300.000	44	36	37	32	36	24	31	30
	up to 15.000	-	2	1	-	1	1	-	2
Declared liable but exempted from punishment		1	-	-	1	6	1	1	-

Analysing the presented data, we can conclude that the largest number of convictions was within the unconditional conviction, while the situation with the amount of the fine was without significant differences in the observed period. The most often imposed fine was in the amount of 15.001 to 300.000 dinars (70% on average). In contrast to the mentioned fine, there were no cases with the highest possible fine imposed, during the observed period.

The situation is similar in the separately observed region of Vojvodina. Data for this region are systematized and presented in Table 4.

Table 4. Statistical representation of convictions of legal entities for economic offences in the area of environmental protection in the region of Vojvodina for the period 2010-2017

		2010	2011	2012	2013	2014	2015	2016	2017
CONVICTIONS Total		6	18	14	18	9	14	12	17
Conviction	Conditional	2	14	14	14	7	9	11	11
	Unconditional	4	4	-	4	2	5	1	6
Fine	more than 3.000.000	-	-	-	-	-	-	-	-
	from 600.001 to 3.000.000	1	-	3	1	1	-	2	-
	from 300.001 to 600.000	-	2	3	5	2	1	4	3
	from 15.001 to 300.000	5	15	8	12	6	8	6	13
	up to 15.000	-	1	-	-	-	5	-	1
Declared liable but exempted from punishment		-	-	-	-	-	-	-	-

The tendency of convictions shown in the previous table reflects the situation in the region of Vojvodina. It refers both to the disproportion between the number of reports and the number of convictions, as well as to the type of conviction. The case of imposed fines is similar in this region, where the largest number of fines ranges from 15.001 to 300.000 dinars, while other fines are rarely imposed. Also, the highest fine was not imposed in this region for the observed period.

Conclusions

There are many problems that state authorities face regarding the liability of legal entities for delicts they commit in their work, particularly with regard to liability for environmental offenses. Analysing the data collected for this paper, we can classify the most significant problems into four groups.

The first group of problems relates to the fact which clearly stands out from the research, that the liability for environmental damage cannot be observed solely as an issue or problem of liability of legal entities, given that the number of detected economic offenses for environmental damage is small in relation to the total number of delicts.

The second group of problems that the state authorities face, primarily judicial ones when it comes to delicts against the environment, is the non-existence of coordinated activities between the police, prosecution, and inspection bodies. This is primarily due to the fact that the officers of the inspection bodies are professionally trained staff in the field of environmental protection (which can be concluded from the number of filed reports by this body) who can help the police and prosecutor's office seeking the direction and collecting evidence. Also, these officers are on the field, by the rules, and are the first to obtain evidence and information, which is of great importance to prove the delicts in a qualitative way.

The third group includes the problems of the non-existence of state authorities' specialization who, in accordance with the significance and danger of environment delict, would exclusively be responsible for research of concrete delicts against the environment.

Finally, the third group of identified problems encompasses problems related to proving the guilt of legal entities for the committed delict, which has a direct impact on the disproportion between the number of filed reports and the number of convicted legal entities for environmental delict. Problems related to expertise, method of gathering evidence, and similar could be included in this group. To support the abovementioned, the analysis of research results reveals that the detected number of crimes against the environment is rather small compared to the total number of committed crimes, so it can be reasonably assumed that the dark number of these crimes is significant, where in addition to actions to combat environmental pollution, this type of crime is dominant among the perpetrators due to the possibility of obtaining large profits with minimal risk of detection and prosecution.

Conflict of interests

The authors declare no conflict of interest.

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Indicators	Period			Total
	Month 1	Month 2	Month 3	
Distance crossed (km)	12.926	11.295	13.208	37.429
Fuel consumption (litre)	3.231	2.823	3.302	9.356
Value of fuel consumption (RSD)	242.378	211.790	247.653	701.821
Total time spend on touring (hour)	314	266	417	997
Value of total time spend on touring (RSD)	47.048	39.890	62.570	149.508
Number of tours	98	77	102	277
Toll value (RSD)	0	0	0	0
Number of pallets transported (piece)	1.179	976	1358	3.513
Total weight transported (kg)	602.600	429.225	711.116	1.742.941
Vehicle maintenance costs (RSD)	203.858	164.970	224.806	593.634
Lease costs (RSD)	480.938	454.214	565.784	1.500.936
Total sum (RSD)	974.222	870.864	1.100.813	2.945.899

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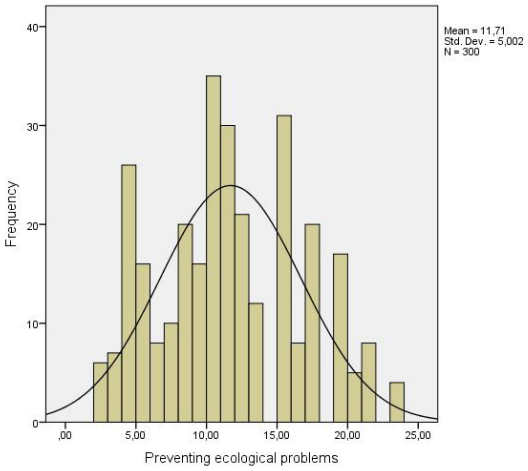

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