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RESEARCH OF THE ECONOMIC POSITIONING OF THE WESTERN BALKAN COUNTRIES USING THE LOPCOW AND EDAS METHODS

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The issue of analyzing the factors of the dynamics of the economic performance of each economy, which means also the countries of Western Balakan (Albania, Bosnia and Herzegovina, Montenegro, Kosovo, North Macedonia, and Serbia), is continuously very current, challenging, significant and complex. Adequate control of the analyzed economic indicators can have a significant impact on the achievement of the target economic performance of each economy, including the countries of the Western Balkans. The application of multi-criteria decision-making methods enables adequate control of the key factors of the economic performances of the economies of the Western Balkan countries. In this paper, starting from that, the economic performances of the economies of the Western Balkan countries are comparatively analyzed based on the LOPCOW-EDAS method. According to the results of the given research, Serbia is the leading country in the Western Balkans in terms of economic performance. Followed by: Montenegro, Kosovo, North Macedonia, Albania, and Bosnia and Herzegovina. Recently, the economic performance of the Serbian economy has significantly improved. Adequate control of relevant influential factors can greatly influence the achievement of the target economic performance of the Serbian economy. The digitization of the company's entire operations certainly plays a significant role in this.

Keywords: Economy; Performance; Western Balkans; LOPCOW-EDAS method.

INTRODUCTION

Research into the factors of the dynamics of the economic performance of each economy, which means also the countries of the Western Balkans (Albania, Bosnia and Herzegovina, Montenegro, Kosovo, North Macedonia, and Serbia), is very challenging, significant, complex, and continuously current. It indicates the critical factors and what measures should be taken to achieve the target economic performance. Bearing that in mind, this paper comparatively analyzes the economic performance of the economies of the Western Balkan countries using the LOPCOW-EDAS method. Based on a complex comparative analysis using the given methodology, the real situation in terms of the achieved economic performance of the economy of the Western Balkan countries can be viewed and relevant measures for improvement in the future can be proposed, such as effective management of the growth of the gross domestic product, inflation, industry, agriculture, imports, exports, revenues, taxes, etc.

Permanent control of key factors is a basic assumption for improving the economic performance of the economies of the Western Balkans. In addition to the application of ratio analysis, statistical analysis, and DEA analysis (Amini et al., 2019; Chen et al., 2021a, Chang et al., 2020; Fenyves, & Tarnóczi, 2020; Guo, & Cai, 2020; Lee et al., 2011; Lin , 2020; Pendharkar, 2021; Podinovski et al., 2021; Rostamzadeh et al., 2021; Tone, 2002; Tsai et al., 2021), and the use of multi-criteria decision-making methods, including the LOPCOW-EDAS method, a significant role is played in this. About the classical analysis, their integrated application gives more accurate results of the achieved economic performance of the

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economy of the Western Balkan countries as a basis for improvement in the future by applying adequate measures. In this paper, with that in mind, the comparative analysis of economic performance factors of the economies of the Western Balkan countries is based on ratio analysis, statistical analysis, and, in particular, the use of the LOPCOW-EDAS method, which enables the ranking of alternatives (in this particular case, the alternatives are the countries of the Western Balkans) based on the simultaneous use of several selected criteria. Knowing the positioning of certain countries of the Western Balkans is a prerequisite for improvement in the future by applying relevant economic and other measures.

The literature devoted to the analysis of the economic performance of each economy is very rich. In classical literature, the analysis of the economic performance of the economy is mainly based on financial analysis, ratio analysis, and statistical analysis. In contemporary literature, DEA (Data Envelopment Analysis) models are increasingly used in the world when analyzing the efficiency of companies from all countries and economic sectors (Amin, & Hajjami, 2021; Chen et al., 2018, 2020, 2021a,b; Cooper et al., 1999; Rasoulzadeh et al., 2021; Stević et al., 2022). This is the case, for example, with the analysis of the efficiency of companies in Serbia (Đurić et al., 2020; Mandić et al., 2017; Martić, & Savić, 2001; Radonjić, 2020). They give a realistic picture of which domestic or foreign companies are efficient and which are not and what measures should be taken to increase efficiency (Alam et al., 2022; Amirteimoori et al., 2022; Andersen, & Petersen, 1993; Banker et al., 1984; Fotova Čiković & Lozić, 2022; Moghaddas et al., 2022; Park, & Kim, 2022; Sala-Garrido, 2023).

Recently, in the world literature, multi-criteria decision-making methods (ARAS, MARCOS, PROMETHEE, TOPSIS, WASPAS, etc.) are increasingly being applied when analyzing the performance of companies from all countries of the world and economic sectors (Ayçin & Arsu, 2021; Demir et al., 2023; Ecer & Aycin, 2022; Ecer & Pamucar, 2022; Mishra et al., 2022; Nguyen et al., 2022; Popović et al., 2022; Vinogradova et al, 2018; Rani et al., 2022; Toslak et al., 2022). The situation is the same, for example, with literature in Serbia (Lukic, 2022a,b, 2023; Stojanović et al., 2022). Because multi-criteria decision-making methods (DCDM) lead to more realistic results compared to classical methods (such as financial analysis, and ratio analysis) as a basis for improvement in the future by applying relevant eco-friendly and other measures. Based on that, in this paper, the economic performance factors of the economies of the Western Balkan countries are comparatively analyzed using, in addition to ratio analysis and statistical analysis, the LOPCOW-EDAS method. LOPCOW is a newer method of multi-criteria decision-making that is used to determine the weighting coefficients of the criteria. Compared to the classical method, for example, ratio analysis, the LOPCOW-EDAS method gives more accurate results considering that they simultaneously integrate several indicators. This enables the selection of adequate economic and other measures to improve the economic performance of the economies of the Western Balkans in the future.

In this paper, the necessary empirical data from the World Bank are used, for the reason that they fully correspond to the observed aspect of the research on economic performance factors of the Western Balkans economy.

This study is designed to include, in addition to the introduction and conclusion, research methodology, results, and discussion. As part of the introduction, a review of the literature on the methodology used in the analysis of the economic performance of all entities, which means the economy of each country, was briefly indicated.

The contribution of this study to the literature is reflected in the fact that it indicates the performance positioning of individual countries of the Western Balkans and what concrete measures should be taken in order to improve in the future. A significant research question is the comparative analysis of the performance positioning (economic indicators) of individual countries of the Western Balkans on the basis of integrated different methods of multi-criteria decision-making.

METHODS

Based on the statistical data of the World Bank, the research of the economic performance of the countries of the Western Balkans using the LOPCOW - EDAS method is based. In the following, we will present the basic characteristics of the given methods.

The **LOPCOW** (*Logarithmic Percentage Change-driven Objective Weighting*) method is used to determine the weighting coefficients of the criteria (Ecer & Pamučar, 2022). The benefits of choosing the LOPCOW method are as follows: (1) a suitable solution is provided for the benefit and cost-oriented criteria without restrictions, (2) expressing the mean value of the squared value of the series (as a percentage of their standard deviations), the differences caused by the size of the data are eliminated, (3) there are factors which do not affect it such as negative raw data, i.e. negative values. The average application of the LAPCOW method takes place through the following steps (Ecer & Pamučar, 2022; Demir et al., 2023):

1. Create an initial decision matrix for a decision problem consisting of *m* alternatives and *n* criteria,
2. Obtaining the normalized decision matrix (*R*),
3. Calculation of percentage values (PV) of criteria, and
4. Calculation of objective weights.

Step 1: Defining an initial decision matrix for a decision problem consisting of *m* alternatives and *n* criteria as follows:

$$X = \begin{bmatrix} x_{11} & \cdots & x_{1j} & \cdots & x_{1n} \\ \vdots & \vdots & \vdots & \ddots & \ddots \\ x_{m1} & \dots & x_{mj} & \dots & x_{mn} \end{bmatrix} \quad (1)$$

Step 2: Determination of the normalized decision matrix (*R*). The linear max-min normalization technique is used for the elements of the normalized decision matrix. For cost-specific criteria, the following equation applies

$$r_{ij} = \frac{x_{max} - x_{ij}}{x_{max} - x_{min}} \quad (2)$$

The following equation is used for beneficial specific criteria

$$r_{ij} = \frac{x_{ij} - x_{min}}{x_{max} - x_{min}} \quad (3)$$

Step 3: Calculation of percentage values (PV) of criteria. The following equation is used to determine the percentage values of each criterion

$$PV_{ij} = \left| ln \left[\frac{\sqrt{\frac{\sum_{i=1}^{m} r_{ij}^2}{m}}}{\sigma} \right] \right| \cdot 100 \quad (4)$$

where σ the standard deviation represents the number of *m* alternatives.

Step 4: Calculation of objective weights. By applying the following equation, the weighting coefficients of the criteria are determined

$$w_{ij} = \frac{PV_{ij}}{\sum_{i=1}^{n} PV_{ij}} \quad (5)$$

where the sum condition must be met $\left(\sum_{i=1}^{m} w_j = 1.\right.$

A Bayesian approach combining LMAW (Logarithm Methodology of Additive Weights) and LOPCOW weights. The weight values obtained by both subjective weighting methods are combined using the equation below. The optimal values of the weight coefficients of the criteria were determined in this way (i.e. based on the Bayesian approach) (Vinogradova et al., 2018). In the following equation, the criteria weights LMAW (*Logarithm Methodology of Additive Weights*) and LOPCOW are represented as w_j^{LMAW} and w_j^{LOPCOW}, respectively

$$w_j = \frac{w_j^{LMAW} . w_j^{LOPCOW}}{\sum_{j=1}^{m} w_j^{LMAW} . w_j^{LOPCOW}} \quad (6)$$

The **EDAS** (*Evaluation based on Distance from Average Solution*) method is very useful in cases where we have conflicting criteria (Keshavarz Ghorabaee et al., 2015). The choice of the best alternative is made according to the distance from the average solution (AV). There are two measures of desirability: positive distance from the average (PDA), and negative distance from the average (NDA). They show the difference between each (alternative) solution and the average solution. The assessment of the desirability of the alternatives is carried out according to higher values of PDA and lower values of NDA. A high value of PDA or a lower value of NDA indicates that the choice (alternative) is better than the average solution.

Let's denote n alternatives and *m* criteria. The process of applying the EDAS method consists of the following steps (Keshavarz Ghorabaee et al., 2015):

1. Selection of the most important criteria that describe the alternatives,
2. Formation of the decision matrix (*X*),

3. Determining the average solution according to all criteria,
4. Calculation of the positive distance from the average (*PDA*) and the negative distance from the average (*NDA*) of the matrix according to the type of criteria (benefit and costs),
5. (5) Determining the weighted sum of *PDA* and *NDA* for all alternatives,
6. (6) Normalization of *SP* and *SN* values for all alternatives,
7. (7) Calculating the mean value (*AS*) for all alternatives, and
8. (8) Ranking of alternatives according to descending mean value (*AS*).

Step 1: Selection of the most important criteria that describe the alternatives.
Step 2: Formation of the decision matrix (*X*) as follows:

$$X = \left[X_{ij}\right]_{n\ x\ m} = \begin{bmatrix} X_{11} & X_{12} & \cdots & X_{1m} \\ X_{21} & X_{22} & \cdots & X_{2m} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n1} & X_{n2} & \cdots & X_{nm} \end{bmatrix}, \quad (7)$$

where: *Xij* denotes the performance value of the *i* -th alternative about the *j* -th criterion.

Step 3: Determining the average solution according to all criteria as follows:

$$AV = \left[AV_j\right]_{1\ x\ m}, \quad (8)$$

wherein:

$$AV_j = \frac{\sum_{i=1}^{n} X_{ij}}{n}. \quad (9)$$

Step 4: Calculation of the positive distance from the average (*PDA*) and the negative distance from the average (*NDA*) of the matrix according to the type of criteria (benefit and costs) as follows:

$$PDA = \left[\left[PDA_{ij}\right]\right]_{n\ x\ m}, \quad (10)$$

$$NDA = \left[\left[NDA_{ij}\right]\right]_{n\ x\ m}. \quad (11)$$

If the *j*-th criterion is beneficial:

$$PDA_{ij} = \frac{\max\left(0,\left(X_{ij} - AV_j\right)\right)}{AV_j}, \quad (12)$$

$$NDA_{ij} = \frac{max\left(0,\left(AV_j - X_{ij}\right)\right)}{AV_j}. \quad (13)$$

If the *j*-th criterion is non-beneficial:

$$PDA_{ij} = \frac{\max\left(0,\left(AV_j - X_{ij}\right)\right)}{AV_j}, \quad (14)$$

$$NDA_{ij} = \frac{max\left(0,\left(X_{ij} - AV_j\right)\right)}{AV_j}, \quad (15)$$

where: PDA_{ij} and NDA_{ij} denote the positive and negative distances of the *i* -th alternative from the average solution in terms of the *j* -th criterion, respectively.

Step 5: Determining the weighted sum of *PDA* and *NDA* for all alternatives as follows:

$$SP_i = \sum_{j=1}^{m} w_j PDA_{ij}, \quad (16)$$

$$SN_i = \sum_{j=1}^{m} w_j NDA_{ij}. \quad (17)$$

where: w_j the weight of the *j*-th criterion.

Step 6: Normalization of *SP* and *SN* values for all alternatives as follows:

$$NSP_i = \frac{SP_i}{max_i(SP_i)}, \quad (18)$$

$$NSN_i = 1 - \frac{SN_i}{max_i(SN_i)}. \quad (19)$$

Step 7: Calculating the mean value (*AS*) for all alternatives as follows:

$$AS_i = \frac{1}{2}\left(NSP_i + NSN_i\right), \quad (20)$$

where is: $0 \leq AS_i \leq 1$.

Step 8: Ranking of alternatives according to descending mean value (*AS*). The alternative with the highest *AS* value is the best.

RESULTS

When researching the economic countries of the Western Balkans using the LAPCOW-EDAS method, the central problem is the choice of criteria and determining their weight coefficients as realistically as possible. The selected criteria are (Table 1):
(C1) gross domestic product,

(C2) growth rate of gross domestic product,
(C3) inflation,
(C3) agriculture, forestry and fishing,
(C4) industry,
(C5) export,
(C6) import,
(C7) capital,
(C8) foreign direct investments, and
(C9) military expenditures.

In this study, the selected criteria are economic indicators according to World Bank statistics. The alternatives are (Table 1):
A1 – Albania,
A2 – Bosnia and Herzegovina,
A3 – Montenegro,
A4 – Kosovo,
A5 – North Macedonia, and
A6 – Serbia.

Table 1: Initial data, 2021

	Country	GDP (current US$) (billions)	GDP growth (annual %)	Inflation, GDP deflator (annual %)	Agriculture, forestry, and fishing, value added (% of GDP)	Industry (including construction), value added (% of GDP)	Exports and goods and services (% of GDP)	Imports of goods and services (% of GDP)	Cross capital formation (% of GDP)	Foreign direct investment, net inflows (% of GDP) (2022)	Military expenditure (% of GDP)
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A1	Albania	17.93	8.9	3.5	18	21	31	45	25	7.6	1.4
A2	Bosnia and Herzegovina	23.65	7.4	4.9	5	25	42	54	26	2.6	0.9
A3	Montenegro	5.86	13.0	4.7	6	15	43	62	27	14.13	1.7
A4	Kosovo	9.41	10.7	6.1	7	27	33	65	36	8.6	0.9
A5	North Macedonia	13.83	5.5	2.0	7	22	66	82	32	6.4	1.5
A6	Serbia	63.08	7.5	5.9	6	25	54	62	25	7.2	2.1

Source: The World Bank. https://data.worldbank.org/country

Using the LAPCOW method, the weighting coefficients of the criteria were determined. The calculation procedure is shown in Table 2. (All calculations and results are the author's).

Therefore, the most important criterion in this particular case is C5 (Industry). Table 3-8 shows the procedure and results of the EDAS method. (All calculations and results are the author's).

Table 2: Weight coefficients of criteria

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
	max	max	min	max	max	max	max	max	max	max
A1	17.93	8.9	3.5	18	21	31	45	25	7.6	1.4
A2	23.65	7.4	4.9	5	25	42	54	26	2.6	0.9
A3	5.86	13	4.7	6	15	43	62	27	14.13	1.7
A4	9.41	10.7	6.1	7	27	33	65	36	8.6	0.9
A5	13.83	5.5	2	7	22	66	82	32	6.4	1.5
A6	63.08	7.5	5.9	6	25	54	62	25	7.2	2.1
max	63.08	13	6.1	18	27	66	82	36	14.13	2.1
min	5.86	5.5	2	5	15	31	45	25	2.6	0.9

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
	max	max	min	max	max	max	max	max	max	max
A1	0.21094	0.453333	0.365854	1	0.5	0	1	0	0.566349	0.583333
A2	0.310905	0.253333	0.707317	0	0.833333	0.314286	0.756757	0.090909	1	1
A3	0	1	0.658537	0.076923	0	0.342857	0.540541	0.181818	0	0.333333
A4	0.062041	0.693333	1	0.153846	1	0.057143	0.459459	1	0.479618	1
A5	0.139287	0	0	0.153846	0.583333	1	0	0.636364	0.670425	0.5
A6	1	0.266667	0.95122	0.076923	0.833333	0.657143	0.540541	0	0.601041	0

	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**	
	max	max	min	max	max	max	max	max	max	max	
A1	0.044496	0.205511	0.133849	1	0.25	0	1	0	0.320751	0.340278	
A2	0.096662	0.064178	0.500297	0	0.694444	0.09877551	0.572681	0.008264	1	1	
A3	0	1	0.43367	0.005917	0	0.11755102	0.292184	0.033058	0	0.111111	
A4	0.003849	0.480711	1	0.023669	1	0.003265306	0.211103	1	0.230034	1	
A5	0.019401	0	0	0.023669	0.340278	1	0	0.404959	0.44947	0.25	
A6	1	0.071111	0.904819	0.005917	0.694444	0.431836735	0.292184	0	0.36125	0	
Sum of squares	1.164408	1.821511	2.972635	1.059172	2.979167	1.651428571	2.368152	1.446281	2.361504	2.701389	
Squared mean	0.440531	0.550986	0.703874	0.420153	0.704647	0.52463139	0.628245	0.490965	0.627363	0.670993	
Standard Deviation	0.396419	0.381971	0.400555	0.403538	0.364296	0.388724174	0.348878	0.404112	0.334326	0.441449	
PV	10.551	36.63637	56.37501	4.034734	65.97319	29.98258738	58.82074	19.4682	62.94071	41.8697	386.6523
w	0.027288	0.094753	0.145803	0.010435	0.170627	0.077544	0.152128	0.050351	0.162784	0.108288	1

Table 3: Initial Matrix

Weights of criteria	0.027288	0.094753	0.145803	0.010435	0.170627	0.077544	0.152128	0.050351	0.162784	0.108288
Kind of criteria	1	1	1	1	1	1	1	1	1	1
A1	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
A2	17.93	8.9	3.5	18	21	31	45	25	7.6	1.4
A3	23.65	7.4	4.9	5	25	42	54	26	2.6	0.9
A4	5.86	13	4.7	6	15	43	62	27	14.13	1.7
A5	9.41	10.7	6.1	7	27	33	65	36	8.6	0.9
A6	13.83	5.5	2	7	22	66	82	32	6.4	1.5
Average Solution	22.2933	8.8333	4.5167	8.1667	22.5000	44.8333	61.6667	28.5000	7.7550	1.4167

Table 4: Dij+

Weights of criteria	0.027288	0.094753	0.145803	0.010435	0.170627	0.077544	0.152128	0.050351	0.162784	0.108288
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
A1	0.0000	0.0075	0.0000	1.2041	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2	0.0609	0.0000	0.0849	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000
A3	0.0000	0.4717	0.0406	0.0000	0.0000	0.0000	0.0054	0.0000	0.8221	0.2000
A4	0.0000	0.2113	0.3506	0.0000	0.2000	0.0000	0.0541	0.2632	0.1090	0.0000
A5	0.0000	0.0000	0.0000	0.0000	0.0000	0.4721	0.3297	0.1228	0.0000	0.0588
A6	1.8295	0.0000	0.3063	0.0000	0.1111	0.2045	0.0054	0.0000	0.0000	0.4824

Table 5: Dij-

Weights of criteria	0.027288	0.094753	0.145803	0.010435	0.170627	0.077544	0.152128	0.050351	0.162784	0.108288
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
A1	0.1957	0.0000	0.2251	0.0000	0.0667	0.3086	0.2703	0.1228	0.0200	0.0118
A2	0.0000	0.1623	0.0000	0.3878	0.0000	0.0632	0.1243	0.0877	0.6647	0.3647
A3	0.7371	0.0000	0.0000	0.2653	0.3333	0.0409	0.0000	0.0526	0.0000	0.0000
A4	0.5779	0.0000	0.0000	0.1429	0.0000	0.2639	0.0000	0.0000	0.0000	0.3647
A5	0.3796	0.3774	0.5572	0.1429	0.0222	0.0000	0.0000	0.0000	0.1747	0.0000
A6	0.0000	0.1509	0.0000	0.2653	0.0000	0.0000	0.0000	0.1228	0.0716	0.0000

Table 6: PDA

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	Qi+	Si+
A1	0.0000	0.0007	0.0000	0.0126	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0133	0.0642
A2	0.0017	0.0000	0.0124	0.0000	0.0190	0.0000	0.0000	0.0000	0.0000	0.0000	0.0330	0.1595
A3	0.0000	0.0447	0.0059	0.0000	0.0000	0.0000	0.0008	0.0000	0.1338	0.0217	0.2069	1.0000
A4	0.0000	0.0200	0.0511	0.0000	0.0341	0.0000	0.0082	0.0133	0.0177	0.0000	0.1445	0.6982
A5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0366	0.0502	0.0062	0.0000	0.0064	0.0993	0.4800
A6	0.0499	0.0000	0.0447	0.0000	0.0190	0.0159	0.0008	0.0000	0.0000	0.0522	0.1824	0.8818
										MAX	0.2069	

Table 7: NDA

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	Qi-	Si-
A1	0.0053	0.0000	0.0328	0.0000	0.0114	0.0239	0.0411	0.0062	0.0033	0.0013	0.1253	0.3587
A2	0.0000	0.0154	0.0000	0.0040	0.0000	0.0049	0.0189	0.0044	0.1082	0.0395	0.1954	0.0000
A3	0.0201	0.0000	0.0000	0.0028	0.0569	0.0032	0.0000	0.0027	0.0000	0.0000	0.0856	0.5619
A4	0.0158	0.0000	0.0000	0.0015	0.0000	0.0205	0.0000	0.0000	0.0000	0.0395	0.0772	0.6047
A5	0.0104	0.0358	0.0812	0.0015	0.0038	0.0000	0.0000	0.0000	0.0284	0.0000	0.1611	0.1754
A6	0.0000	0.0143	0.0000	0.0028	0.0000	0.0000	0.0000	0.0062	0.0116	0.0000	0.0349	0.8213
										MAX	0.1954	

Table 8: Ranking of the Western Balkan countries

Country	Si	RANKING
Albania	0.211	**5**
Bosnia and Herzegovina	0.080	**6**
Montenegro	0.781	**2**
Kosovo	0.651	**3**
North Macedonia	0.328	**4**
Serbia	0.852	**1**

Serbia is a leading country in the Western Balkans. Its economic performance is at an enviable level. Followed by: Montenegro, Kosovo, North Macedonia, Albania, and Bosnia and Herzegovina. Adequate management of analyzed statistical variables as factors (gross domestic product, growth rate of gross domestic product, inflation, agriculture, forestry and fishing, industry, export, import, capital, foreign direct investments, and military expenditures) had a positive effect on that. Likewise, the geopolitical and economic climate, foreign direct investments, the energy crisis, the digitalization of the company's entire operation, etc.

The target economic performance of the West Balkan countries can be achieved by adequate management of the analyzed economic indicators (gross domestic product, growth rate of gross domestic product, inflation, agriculture, forestry and fishing, industry, export, import, capital, foreign direct investments, and military expenditures) In this context, it is important to adequately adapt to the dynamic business environment. Digitization of the entire operations of companies facilitates their rapid adaptation to a dynamic business environment.

DISCUSSION

The economic performance of the economy of each country, which means also the countries of the Western Balkans, can be analyzed in different ways: based on financial analysis, statistical analysis, DEA analysis, and the application of multi-criteria decision-making methods. In recent times, multi-criteria decision-making methods have been used more and more to obtain a more realistic representation of the achieved economic performance. Compared to the classical analysis methodology, they provide a more realistic basis for managing the economic performance of the economies of the Western Balkans as efficiently as possible. In the center of attention were selected key criteria as factors of the economic performance of the countries of the Western Balkans. In this case, the LOPCOW-EDAS method was applied. The selected criteria are gross domestic product, the growth rate of gross domestic product, inflation, agriculture, forestry and fishing, industry, export, import, capital, foreign direct investments, and military expenditures. Effective control of the analyzed factors (criteria) significantly contributes to the achievement of the target economic performances of the countries of the Western Balkans.

Conducted empirical research, using the example of the LOPCOW-EDAS method, demonstrated the justification of applying, in addition to the classical

methodology, the method of multi-criteria decision-making in the evaluation of the economic performance of the economies of the Western Balkan countries, as well as the DEA model. Because they give more accurate results. That is why the LAPCOW-EDAS method was used in the research of the economic performance of the countries of the Western Balkans. It is a general recommendation that in complex analyses of the economic performance of the economies of the Western Balkan countries, different methods of multi-criteria decision-making, including the LAPCOW-REDAS method, should be used in an integrated manner as much as possible.

The advantages and implications of this study are reflected in the fact that it indicates the real performance positioning of individual countries of the Western Balkans. Likewise, what concrete measures should be taken in order to improve the positioning of the Western Balkan countries in the future. The limitation is that there are no similar studies of the analysis of the same economic indicators of the Western Balkan countries as in this study and based on other methods of multi-criteria decision-making. This enables a better understanding of their positioning. Therefore, for the sake of the whole, empirical research is recommended from this point of view as well.

CONCLUSION

Empirical research using the given methodology has shown that the leading country in the Western Balkans is Serbia.

Overall, the economic performance of the Serbian economy has improved significantly in recent times. Adequate management of analyzed statistical variables as factors (gross domestic product, inflation, agriculture, industry, import, export, capital, income, taxes) contributed to this.

Significant determinants of the economic performance of the Serbian economy also include economic climate, foreign direct investments, digitization of the entire company's operations, energy crisis, and so on. Through digitization, the negative impact of the COVID-19 coronavirus pandemic on the economic performance of the Serbian economy has been largely mitigated. By applying adequate control of the analyzed economic indicators, it significantly contributes to the achievement of the target economic performances of the Serbian economy. This is certainly the case with other countries of the Western Balkans.

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ISTRAŽIVANJE EKONOMSKE POZICIONIRANOSTI ZEMALJA ZAPADNOG BALKANA KORIŠČENJEM LOPCOW I EDAS METODA

Problematika analize faktora dinamike ekonomskih performansi svake privrede, što znači i zemalja Zapadnog Balakana (Albanija, Bosna i Hercegovina, Crna Gora, Kosovo, Severna Makedonija i Srbija), kontinuirano je vrlo aktuelna, izazovna, značajna i složena. Adekvatnom kontrolom analiziranih ekonomskih indikatora može se znatno uticati na ostvarenje ciljnih ekonomskih performansi svake privrede, dakle i zemalja Zapadnog Balkan. Primena metoda višekriterijumskog odlučivanja omogućuje adekvatnu kontrolu ključnih faktora ekonomskih preformansi privrede zemalja Zapadnog Balkana. U ovom radu se, polazeći od toga, komparativno analiziraju ekonomske performanse privrede zemalja Zapadnog Balkana na bazi LOPCOW-EDAS metode. Po ekonomskim performansama prema rezultataima datog istraživanja Srbija je vodeća zemlja na Zapadnom Balkanu. Slede: Crna Gora, Kosovo, Severna Makedonija, Albanija i Bosna i Hercegovina. U poslednje vreme su se znatno poboljšale ekonomske performanse privrede Srbije. Na to je uticalo adekvatno upravljanje analiziranim statističkim varijablama, tj ekonomskim indikatorima (bruto domaći proizvod, stopa rasta bruto domaćeg proizvoda, inflacija, poljoprivreda, šumarstvo i ribarstvo, industrija, izvoz, uvoz, kapital, strane direktne investicije i vojni izdaci). Isto tako, povoljna ekonomska klima, primena koncepta održivog razvoja, upravljanje energetskom krizom, digitalizacija celokupnog poslovanja preduzeća, i drugi faktori. Adekvatnom kontrolom relevantnih uticajnih faktora može se u velikoj meri uticati na ostvarenje ciljnih ekonomskih performansi privrede Srbije. Svakako značajnu ulogu u tome ima i digitalizacija celokupnog poslovanja preduzeća.

Ključne reči: Ekonomija; Performanse; Zapadni Balkan; LOPCOW-EDAS metoda.