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PERFORMANCE ANALYSIS OF TRADING COMPANIES IN SRBIA BASED ON DIBR - WASPAS METHODS

Abstract: Recently, when analyzing the performance of trading companies, various multi-criteria decision-making methods are increasingly used individually or integrated. In this way, because several criteria are used integrally at the same time, it is better to get a realistic idea of the achieved performance compared to classical methods. Based on that, this paper analyzes the performance of trading companies in Serbia based on the DIBR and WASPAS methods. The results of the WASPAS method show that DELHAIZE SERBIA DOO BELGRADE is in first place. Next: LIDL SERBIA KD NOVA PAZOVA, MERCATOR-S DOO NOVI SAD, NELT CO. DOO BELGRADE, MOL SERBIA DOO BELGRADE, PHOENIX PHARMA DOO BELGRADE, MERCATA VT DOO NOVI SAD, OMV SERBIA DOO BELGRADE, LUKOIL SERBIA DOO BELGRADE and KNEZ PETROL DOO ZEMUN. Foreign retail chains are better positioned than domestic ones. They apply new business methods (multichannel sales - store and electronic, private label, sale of organic products, etc.) and the degree of digitization of the entire business is greater. Overall, under the positive influence of numerous macro and micro factors (favorable economic climate, efficient management of human resources, assets, capital, sales and profit, digitization of the entire business, etc.), the performance of trading companies in Serbia has improved.

Keywords : performance, efficiency, factors, DIBR and WASPAS method, Serbian trade

1.INTRODUCTION

It is very challenging, current, important and complex research on the performance of trading companies based on multi-criteria decision-making methods in the function of realistic assessment and improvement in the future by applying relevant measures (Ersoy, 2017; Đalic et al., 2020; Kovač et al., 2021; Lalić , et al., 2021; Mikšić et al., 2021; Stankovič et al., 2020; Saaty, 2008; Trunkg, 2021). Based on that, the subject of research in this paper is the application of DIBR and WASPAS methods in the evaluation of the performance of trading companies in Serbia. The primary goal and purpose of this is to investigate the performance of trading companies in Serbia as complex and realistically as possible in order to improve them in the future by applying adequate measures. The main research hypothesis in this paper is based on the fact that continuous analysis of critical performance factors of trading companies, in the specific case of Serbia, based on multi-criteria decision-making methods, including DIBR and WASPAS, is a basic assumption for improvement in the future by applying adequate measures. Because at the same time several criteria are simultaneously integrated, which are nothing but critical performance factors of trading companies, which is not the case with classic methods. Empirical data for the research of the treated problem in this paper were collected from the Agency for Economic Registers of the Republic of Serbia. The data used are "produced" in accordance with the relevant international standards. With regard to the international comparison of the obtained results, there are no restrictions.

2.LITERATURE REVIEW

In contemporary literature, there is an increasing number of works devoted to the evaluation of the performance of trading companies based on various methods of multi-criteria decision-making (Ayçin et al., 2021: Popović et al., 2022; Ecer & Aycin, 2022; Mishra et al., 2022; Nguyen et al., 2022; Rani et al., 2022; Toslak et al., 2022; Shanmugasundar et al., 2022; Satıcı, 2022; Keshavarz-Ghorabaee et al., 2021) . This is also the case with literature in Serbia (Lukic & Hadrovic, 2019, 2021, 2022; Lukic $ Kozarevic, 2021; Lukic, 2020; Lukic, 2021a,b,c,d,e; Lukic et al., 2020a,b; Lukic, 2022a,b,c,d,e,f,g,h, 2023). In this work, it serves as a theoretical, methodological and empirical basis for the most complex research into performance factors of trading companies in Serbia.

Research through the literature reveals that there are wide possibilities of applying multi-criteria decision-making methods in trade. In his work, Ersoy (2017) theoretically analyzes the application of various methods of multi-criteria decision-making in retail, pointing out their characteristics and significance. This paper can, in our opinion, serve as a good basis for choosing a method that will be applied in a specific case in retail and in other trade sectors. A special paper is dedicated to identifying factors that influence the effectiveness of websites in retail based on the application of the Fuzzy DEMATEL method (Gaur et al., 2020). By the way, the importance of applying different methods in the analysis of the efficiency of electronic commerce is multiple. In the literature, considerable attention has been devoted to the analysis of the efficiency and performance of global retail chains using the integrated fuzzy SWARA and fuzzy EATWOS methods (Görçün et al., 2022). A separate study analyzed the efficiency and marketing growth of retail food companies (Harangi-Rákos & Fenyves, 2021). The subject of research in the literature is the evaluation and selection of suppliers in the context of the green economy (Keshavarz-Ghorabaee et al., 2020). In the literature, special attention is paid to the analysis of logistics efficiency based on the multi-criteria decision-making method (LMAW) (Pamučar et al., 2021). In a separate study, the importance of improving the procurement process for retail companies was pointed out (Maxim, 2021), and multi-criteria decision-making methods play a significant role in this. By the way, the possibilities of applying multi-criteria decision-making methods in the analysis of logistics efficiency are wide. With their help, the efficiency of individual distribution channels can be seen. Similarly, by means of multi-criteria decision-making methods, the selection of employees in retail and in supplementary activities, such as for example tourism, can be carried out (Urosevic et al., 2017). All in all, there are wide possibilities of applying multi-criteria decision-making methods in order to improve the performance and efficiency of trading companies. As a result, works devoted to the analysis of financial performance and trade efficiency in Serbia have been published in Serbian literature based on various multi-criteria decision-making methods (Fuzzy AHP - TOPSIS, ELECTRE, MABAC, OCRA, WASPAS, ARAS, MARCOS, TRUST) (Lukic et al. , 2020; Lukic & Hadrovic Zekovic, 2021, 2022; Lukic, 2021a,b, 2022a,b,c,d, e,f,g,h; Lukic et al., 2021), as well as DEA approaches (Lukic, 2022g). Multi-criteria decision-making methods were applied in the performance analysis of trading companies in Serbia for the reason that they provide more realistic results compared to classical methods of financial analysis (for example, ratio analysis), given that several criteria treated as factors are simultaneously observed. When analyzing the performance of trading companies in Serbia using different methods of multi-criteria decision-making, the following criteria were most often used: number of companies, number of employees, assets, capital sales and net profit. This is because they are a good measure of performance and correspond to the nature of the trade. In a special study, significant attention was paid to the comparative analysis of the information performance of trade between the European Union and Serbia based on the MARCOS method (Lukic, 2022h).

3. RESEARCH METHODOLOGY

The main goal and purpose of researching the problem treated in this paper is to, on the basis of modern methods of multi-criteria decision-making - DIBR and WASPAS methods, more realistically assess the positioning of the largest trading companies on the Serbian market. This makes it possible to improve the positioning of the analyzed trading companies in the future by applying adequate measures. This also reflects the basic research hypothesis related to the problem treated in this paper.

The sample in this paper was formed on the basis of the ten largest trading companies in Serbia according to the realized business income in 2021. Relevant necessary data for researching the problem analyzed in this paper is published by the Agency for Economic Registers of the Republic of Serbia.

The research methodology of the treated problem in this work is based on the application of DIBR and WASPAS methods. We will briefly explain their characteristics.

The **DIBR** (Defining Interrelationships Between Ranked criteria) method is based on defining the relationship between ranked criteria, i.e. adjacent criteria. It consists of five steps (Pamucara et al., 2021b; Tešić et al., 2022a,b):

Step 1. Ranking of criteria according to importance.

On a defined set of *n* criteria $C = \{C_1, C_2, \dots, C_n\}$, the criteria are ranked according to their importance as$C_1 > C_2 > C_3 > \cdots > C_n$.

Step 2. Comparison of criteria and definition of mutual relations.

By comparing the criteria, the values $\lambda_{12}, \lambda_{13}, \dots, \lambda_{1-n,n}$and were obtained λ_n. Thus, for example, when comparing criteria C_1 and $C_{2,\ the\ value}$, etc. was obtained . λ_{12}All compared values must satisfy the condition $\lambda_{n-1,n}, \lambda_{1n} \in [0,1]$. Based on the defined conditions and relationships, the following relationships between the criteria were derived:

$$\mathcal{W}_1 : \mathcal{W}_2 = (1 - \lambda_{12}) : \lambda_{12} \quad (1)$$

$$\mathcal{W}_2 : \mathcal{W}_3 = (1 - \lambda_{23}) : \lambda_{23} \quad (2)$$

...

$$\mathcal{W}_{n-1} : \mathcal{W}_n = (1 - \lambda_{n-1.n}) : \lambda_{n-1,n} \quad (3)$$

$$\mathcal{W}_1 : \mathcal{W}_n = \left(1 - \lambda_{1,n}\right) : \lambda_{1,n} \quad (4)$$

Ratios (1-4) and values $\lambda_{n-1,n}$can be viewed as ratios of criteria to which the decision-maker assigns a total importance in the interval of 100% for the two observed criteria.

Step 3. Defining equations for calculating weight criteria.

Based on the relationship from step 2, the expressions for determining the weighting coefficients of the criteria $\mathcal{W}_1, \mathcal{W}_2, \dots, \mathcal{W}_n$are derived:

$$\mathcal{W}_2 = \frac{\lambda_{12}}{(1 - \lambda_{12})} \mathcal{W}_1 \quad (5)$$

$$\mathcal{W}_3 = \frac{\lambda_{23}}{(1 - \lambda_{23})} \mathcal{W}_2 = \frac{\lambda_{12}\lambda_{23}}{(1 - \lambda_{12})(1 - \lambda_{23})} \mathcal{W}_2 \quad (6)$$

$$\mathcal{W}_n = \frac{\lambda_{n-1,n}}{\left(1 - \lambda_{n-1,n}\right)} \mathcal{W}_{n-1} = \frac{\lambda_{12}\lambda_{23}. \dots . \lambda_{n-1,n}}{(1 - \lambda_{12})(1 - \lambda_{n-1.n}). \dots . \left(1 - \lambda_{n-1,n}\right)} \mathcal{W}_1 = \frac{\prod_{i=1}^{n-1} \lambda_{i,i+1}}{\prod_{i=1}^{n-1} \left(1 - \lambda_{i,i+1}\right)} \mathcal{W}_1 \quad (7)$$

Step 4. Calculation of the weight coefficient of the most influential criterion.

Based on equations (5) - (7) and conditions $\sum_{j=1}^{n} \mathcal{W}_j = 1$, the following mathematical relationship is defined

$$\mathcal{W}_1 \left(1 + \frac{\lambda_{12}}{(1 - \lambda_{12})} + \frac{\lambda_{12}\lambda_{23}}{(1 - \lambda_{12})(1 - \lambda_{23})} + \dots + \frac{\prod_{i=1}^{n-1} \lambda_{i,i+1}}{\prod_{i=1}^{n-1} \left(1 - \lambda_{i,i+1}\right)}\right) = 1 \quad (8)$$

From expression (8), the final expression for defining the weight coefficient of the most influential criterion is derived:

$$\mathcal{W}_1 = \frac{1}{1 + \frac{\lambda_{12}}{(1 - \lambda_{12})}, \frac{\lambda_{12}\lambda_{23}}{(1 - \lambda_{12})(1 - \lambda_{23})} + \dots + \frac{\prod_{i=1}^{n-1} \lambda_{i,i+1}}{\prod_{i=1}^{n-1} \lambda_{i,i+1}}} \quad (9)$$

Based on the obtained value $\mathcal{W}_1$and the use of expressions (5) - (7), the weight coefficients of the other criteria $\mathcal{W}_2, \mathcal{W}_3, \dots, \mathcal{W}_n$are obtained.

Step 5. Defining the degree of satisfaction of the subjective relationships between the criteria.

Based on expression (4), the value of the weighting coefficient of the criterion $\mathcal{W}_n$is defined

$$\mathcal{W}_n = \frac{\lambda_{1n}}{(1 - \lambda_{1n})} \mathcal{W}_1 \quad (10)$$

If the valuesλ_{1n} $\lambda'_{1,n}$are approximately equal, it can be concluded that the decision makers' preference is satisfied. If they differ, it is necessary to first check the ratio for λ_{1n}. If the decision-maker considers that the relationship is λ_{1n}well defined, the relationships between the criteria should be redefined and the weighting coefficients of the criteria should be calculated. If this is not the case, it is necessary to redefine the relationship for λ_{1n}It is necessary that the deviation of the value $\lambda_{1n}$and λ'_{1n}be a maximum of 10%. If this is not the case, it is necessary to redefine the relations between the criteria in order to satisfy this condition.

WASPAS (Weighted Aggregates Sum Product Assessment) method was proposed by Zavadskas et al. (2012). It respects the unique combination of two well-known approaches of multi-criteria decision making (MCDM - Multi-Criteria Decision Making) : the method of weighted sums (WS - Weighted Sum) and the method of weighted products (WP - Weighted Product). The WASPAS method is used to solve various complex problems in multi-criteria decision-making (for example, production decision-making) (Chakraborty & Zavadskas, 2014; Zavadskas et al., 2013a,b). An advanced

fuzzy WASPAS method was developed for solving complex problems under uncertainty. The procedure of the WASPAS method consists of the following steps (Urosevic et al., 2017):

Step 1 . Determining the optimal performance rating for each criterion.

The optimal performance rating is calculated as follows:

$$x_{0j} = \begin{cases} \max\limits_{i} x_{ij}; & j \in \Omega_{max} \\ \min\limits_{i} x_{ij}; & j \in \Omega_{min} \end{cases}, \quad (11)$$

where: x_{0j}denotes the optimal performance rating of the *i* -th criterion, Ω_{max}denotes the benefit criterion (the higher the value, the better), Ω_{min}denotes the set of cost criteria (the lower the value, the better), *m* denotes the number of alternatives (*i*= 0.1 ,..., *m*), and *n* denotes the number of criteria (*j*= 0,1,..., *n*).

Step 2 . Determination of the normalized decision matrix.

The normalized performance rating is calculated as follows:

$$r_{ij} = \begin{cases} \dfrac{x_{ij}}{x_{0j}}; & j \in \Omega_{max} \\ \dfrac{x_{0j}}{x_{ij}}; & j \in \Omega_{min} \end{cases}, \quad (12)$$

where: r_{ij}denotes the normalized performance rating of the *i*- th alternative in relation to the *j* - th criterion.

Step 3 . Calculation of the relative importance of the *i*- th alternative based on the WS method.

The relative importance of the *i*- th alternative, based on the WS method, is calculated as follows:

$$Q_i^{(1)} = \sum_{j=1}^{n} w_j r_{ij}, \quad (13)$$

where: $Q_i^{(1)}$indicates the relative importance of the *i*- th alternative in relation to the *j* - th criterion, based on the WS method.

Step 4 . Calculation of the relative importance of the *i*- th alternative, based on the based WP method.

The relative importance of the alternative, based on the WP method, is calculated as follows:

$$Q_i^{(2)} = \prod_{j=1}^{n} r_{ij}^{w_j}, \quad (14)$$

where: $Q_i^{(2)}$denotes the relative importance of the *i*- th alternative in relation to the *j* - th criterion, based on the WP method.

Step 5 . Calculating the overall relative importance for each alternative.

The total relative importance (common generalized criterion of weight aggregations of additive and multiplicative methods) (Zavadskas, 2012) is calculated as follows:

$$Q_i = \lambda Q_i^{(1)} + (1-\lambda) Q_i^{(2)} = \lambda \sum_{j=1}^{n} w_j r_{ij} + (1-\lambda) \prod_{j=1}^{n} r_{ij}^{w_j} \quad (15)$$

where: λ is the coefficient and $\lambda \in [0, 1]$.

When decision-makers have no preference for the coefficient, the value is 0.5, and equation (5) is expressed as:

$$Q_i = 0.5 Q_i^{(1)} + 0.5 Q_i^{(2)} = 0.5 \sum_{j=1}^{n} w_j r_{ij} + 0.5 \prod_{j=1}^{n} r_{ij}^{w_j} \quad (16)$$

4. RESULTS AND DISCUSSION

Table 1 shows the criteria, alternatives and relevant initial data related to the research of the treated problem in this paper. In the specific case, the selected criteria fully correspond to the nature of business of trading companies and, in addition, are a good measure of performance. The alternatives are the ten best trading companies according to the realized business income in Serbia in 2021.

Table 1: Criteria (C), alternatives (A) and initial data

		Business income	Net result	Business assets	Capital	Number of employees
		C1	**C2**	**C3**	**C4**	**C5**
A1	NELT CO. DOO BELGRADE	80291	488	27246	13814	2094
A2	MERCATA VT DOO NOVI SAD	71694	945	12132	1061	1005
A3	PHOENIX PHARMA DOO BELGRADE	59160	688	28816	7039	526
A4	KNEZ PETROL DOO ZEMUN	51491	483	10637	2969	1171
A5	OMV SERBIA DOO BELGRADE	42520	1193	18259	10064	47
A6	DELHAIZE SERBIA DOO BELGRADE	118913	2973	83479	42756	11637
A7	MERCATOR-S DOO NOVI SAD	81407	-1629	53135	0	8352
A8	LIDL SERBIA KD NOVA PAZOVA	71643	4133	62074	32938	2935
A9	MOL SERBIA DOO BELGRADE	58157	1158	19347	12232	98
A10	LUKOIL SERBIA AD BELGRADE	37563	1799	8969	4823	148

Note: Amounts are expressed in millions of dinars. The number of employees is expressed in whole numbers.
Source: Agency for Economic Registers of the Republic of Serbia

Table 2 shows the descriptive statistics of the initial data for the analyzed trading companies in Serbia.

Table 2: Descriptive statistics

Statistics						
		Business income	Net result	Business assets	Capital	Number of employees
N	Valid	10	10	10	10	10
	Missing	0	0	0	0	0
Mean		67283.9000	1223.1000	32409.4000	12769.6000	2801.3000
Std. Error of Mean		7429.63861	488.22512	8001.90191	4480.62816	1257.83578
Median		65401.5000	1051.5000	23296.5000	8551.5000	1088.0000
Std. Deviation		23494.58020	1543.90338	25304.23565	14168.99034	3977.62598
Skewness		1.030	.227	1.127	1.456	1.720
Std. Error of Skewness		.687	.687	.687	.687	.687
Kurtosis		1.681	1.347	.200	1.258	1.981
Std. Error of Kurtosis		1.334	1.334	1.334	1.334	1.334
Minimum		37563.00	-1629.00	8969.00	.00	47.00
Maximum		118913.00	4133.00	83479.00	42756.00	11637.00

Note: Author's calculation

Descriptive statistics show that, for example, the net result of the largest trading companies in Serbia ranged from -1629.00 (MERCATOR-S) to 4133.00 (LIDL Serbia). The situation is the same with respect to the range and with other statistical variables.
Table 3 shows the correlation matrix of the initial data of the analyzed trading companies in Serbia.

Table 3: Correlations

Correlations						
		1	2	3	4	5
1 Business income	Pearson Correlation	1	.160	.830**	.643*	.873**
	Sig. (2-tailed)		.659	.003	.045	.001
	N	10	10	10	10	10
2 Net result	Pearson Correlation	.160	1	.375	.792**	.040
	Sig. (2-tailed)	.659		.286	.006	.913
	N	10	10	10	10	10
3 Business assets	Pearson Correlation	.830**	.375	1	.794**	.873**
	Sig. (2-tailed)	.003	.286		.006	.001
	N	10	10	10	10	10
4 Capital	Pearson Correlation	.643*	.792**	.794**	1	.544
	Sig. (2-tailed)	.045	.006	.006		.104
	N	10	10	10	10	10
5 Number of employees	Pearson Correlation	.873**	.040	.873**	.544	1
	Sig. (2-tailed)	.001	.913	.001	.104	
	N	10	10	10	10	10
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Note: Author's calculation

In the specific case, there is a strong correlation between the number of employees and business income and business assets at the level of statistical significance. There is a significant correlation between capital and business income, net result and business assets. There is also a significant correlation between the net result and the number of employees. All of this indicates that, among other things, effective management of the observed statistical variables can significantly influence the achievement of the target performance of trading companies in Serbia.
Table 4 shows a ratio analysis of the performance of trading companies in Serbia for 2021.

Table 4: Ratio analysis of the performance of trading companies in Serbia

	Net result/ Business income	Business income/Business assets	Business assets/Capital	Net result/Business assets	Net result/Capital	Net result per employee in thousands
NELT CO. DOO BELGRADE	0.61%	2.946891	1.972347	1.79%	3.53%	233.0468
MERCATA VT DOO NOVI SAD	1.32%	5.909496	11.4345	7.79%	89.07%	940.2985
PHOENIX PHARMA DOO BELGRADE	1.16%	2.053026	4.093763	2.39%	9.77%	1307.985
KNEZ PETROL DOO ZEMUN	0.94%	4.840745	3.582688	4.54%	16.27%	412.468
OMV SERBIA DOO BELGRADE	2.81%	2.328715	1.814289	6.53%	11.85%	25382.98

DELHAIZE SERBIA DOO BELGRADE	2.50%	1.424466	1.952451	3.56%	6.95%	255.4782
MERCATOR-S DOO NOVI SAD	-2.00%	1.532079	0	-3.07%	0	-195.043
LIDL SERBIA KD NOVA PAZOVA	5.77%	1.154155	1.884571	6.66%	12.55%	1408.177
MOL SERBIA DOO BELGRADE	1.99%	3.005996	1.581671	5.99%	9.47%	11816.33
LUKOIL SERBIA AD BELGRADE	4.79%	4.188092	1.859631	20.06%	37.30%	12155.41

Note: Author's calculation

In the specific case, the trading company Delhaize Serbia in 2021 achieved a return on sales of 2.50%, a return on assets of 3.56% and a return on capital of 6.95%. In the same year, the trading company LIDL Serbia achieved a return on sales of 5.77%, a return on assets of 6.66% and a return on capital of 12.55%. So, trading company LIDL Serbia performed more successfully than trading company Delhaize Serbia. Generally speaking, foreign retail chains achieve better performance than domestic ones. One of the reasons for this is that they apply newer business methods and a greater degree of digitization of the entire business.

The weight coefficients of the criteria were determined using the DIBR method. They are shown in Table 5 and Figure 1. (In this paper, all calculations and results are the author's.)

Table 5: Weight coefficients of criteria

Weights of Criteria		
C1	**w1**	**0.2563**
C2	**w2**	**0.2462**
C3	**w3**	**0.1857**
C4	**w4**	**0.1715**
C5	**w5**	**0.1403**
		1

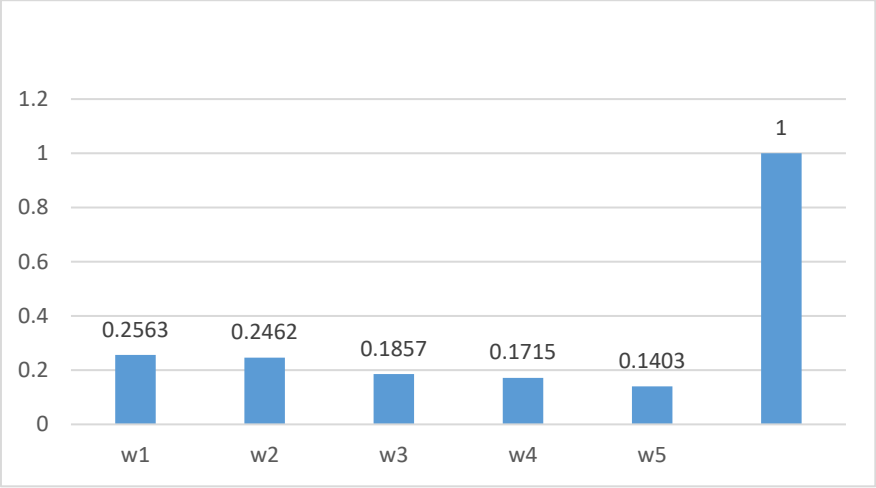

Figure 1: Weight coefficients of criteria
Source: Author's picture

Therefore, in the specific case, the most important criterion is C1 - business income. This means, in other words, that trading companies in Serbia can achieve the target profit if they manage sales effectively. This is achieved, among other things, by applying the concept of managing customers and product categories. Tables 6 – 10 and Figure 2 show the calculations and results of the WASPAS method. (All calculations and results are the author's.)

Table 6: Initial matrix

Initial Matrix					
weights of criteria	0.2563	0.2462	0.1857	0.1715	0.1403
kind of criteria	1	1	1	1	1
	C1	**C2**	**C3**	**C4**	**C5**
A1	80291	488	27246	13814	2094
A2	71694	945	12132	1061	1005
A3	59160	688	28816	7039	526
A4	51491	483	10637	2969	1171
A5	42520	1193	18259	10064	47
A6	118913	2973	83479	42756	11637
A7	81407	-1629	53135	0	8352
A8	71643	4133	62074	32938	2935
A9	58157	1158	19347	12232	98
A10	37563	1799	8969	4823	148
MAX	118913	4133	83479	42756	11637
MIN	37563	-1629	8969	0	47

Table 7: Normalized matrix

Normalized Matrix					
weights of criteria	0.106	0	0.2114	0	0.6826
kind of criteria	1	1	1	1	1
	C1	**C2**	**C3**	**C4**	**C5**
A1	0.6752	0.1181	0.3264	0.3231	0.1799
A2	0.6029	0.2286	0.1453	0.0248	0.0864
A3	0.4975	0.1665	0.3452	0.1646	0.0452
A4	0.4330	0.1169	0.1274	0.0694	0.1006
A5	0.3576	0.2887	0.2187	0.2354	0.0040
A6	1.0000	0.7193	1.0000	1.0000	1.0000
A7	0.6846	0.0000	0.6365	0.0000	0.7177
A8	0.6025	1.0000	0.7436	0.7704	0.2522
A9	0.4891	0.2802	0.2318	0.2861	0.0084
A10	0.3159	0.4353	0.1074	0.1128	0.0127

Table 8: Weighted Normalized matrix

Weighted Normalized Matrix						
	C1	**C2**	**C3**	**C4**	**C5**	**Qi1**
A1	0.1731	0.0291	0.0606	0.0554	0.0252	0.3434
A2	0.1545	0.0563	0.0270	0.0043	0.0121	0.2542
A3	0.1275	0.0410	0.0641	0.0282	0.0063	0.2672
A4	0.1110	0.0288	0.0237	0.0119	0.0141	0.1894
A5	0.0916	0.0711	0.0406	0.0404	0.0006	0.2443
A6	0.2563	0.1771	0.1857	0.1715	0.1403	0.9309
A7	0.1755	0.0000	0.1182	0.0000	0.1007	0.3944
A8	0.1544	0.2462	0.1381	0.1321	0.0354	0.7062
A9	0.1253	0.0690	0.0430	0.0491	0.0012	0.2876
A10	0.0810	0.1072	0.0200	0.0193	0.0018	0.2292

Table 9: Exponentially Weighedt matrix

Exponentially Weighted Matrix						
	C1	C2	C3	C4	C5	Qi2
A1	0.9042	0.5910	0.8123	0.8239	0.7861	0.2811
A2	0.8784	0.6954	0.6990	0.5305	0.7092	0.1606
A3	0.8362	0.6431	0.8208	0.7339	0.6476	0.2098
A4	0.8069	0.5895	0.6821	0.6329	0.7246	0.1488
A5	0.7683	0.7365	0.7541	0.7803	0.4615	0.1536
A6	1.0000	0.9221	1.0000	1.0000	1.0000	0.9221
A7	0.9074	0.0000	0.9195	0.0000	0.9545	0.0000
A8	0.8782	1.0000	0.9465	0.9562	0.8243	0.6552
A9	0.8325	0.7311	0.7622	0.8068	0.5116	0.1915
A10	0.7443	0.8148	0.6608	0.6878	0.5421	0.1494

Table 10: Ranking

	Ranking				λ	0.5		
	Alternatives	Qi1	Qi2	Qi	Qi			Ranking
NELT CO. DOO BELGRADE	A1	0.3434	0.3434	0.3434	0.3434			4
MERCATA VT DOO NOVI SAD	A2	0.2542	0.2542	0.2542	0.2542			7
PHOENIX PHARMA DOO BELGRADE	A3	0.2672	0.2672	0.2672	0.2672			6
KNEZ PETROL DOO ZEMUN	A4	0.1894	0.1894	0.1894	0.1894			10
OMV SERBIA DOO BELGRADE	A5	0.2443	0.2443	0.2443	0.2443			8
DELHAIZE SERBIA DOO BELGRADE	A6	0.9309	0.9309	0.9309	0.9309			1
MERCATOR-S DOO NOVI SAD	A7	0.3944	0.3944	0.3944	0.3944			3
LIDL SERBIA KD NOVA PAZOVA	A8	0.7062	0.7062	0.7062	0.7062			2
MOL SERBIA DOO BELGRADE	A9	0.2876	0.2876	0.2876	0.2876			5
LUKOIL SERBIA AD BELGRADE	A10	0.2292	0.2292	0.2292	0.2292			9

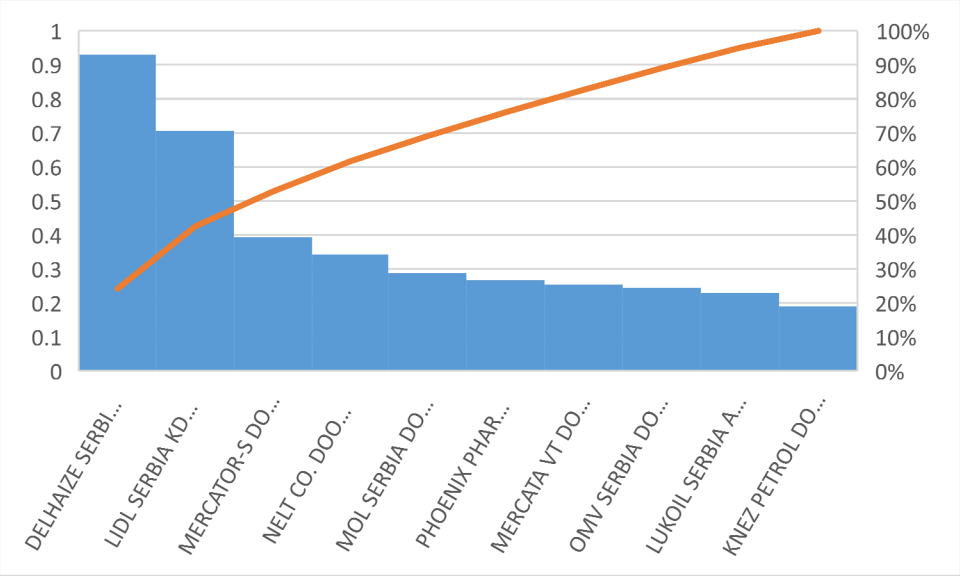

Figure 2: Ranking of trading companies in Serbia
Source: Author's picture

Therefore, the results of the WASPAS method show that DELHAIZE SERBIA DOO BELGRADE is in first place. Next: LIDL SERBIA KD NOVA PAZOVA, MERCATOR-S DOO NOVI SAD, NELT CO. DOO BELGRADE, MOL SERBIA DOO BELGRADE, PHOENIX PHARMA DOO BELGRADE, MERCATA VT DOO NOVI SAD, OMV SERBIA DOO BELGRADE, LUKOIL SERBIA DOO BELGRADE and KNEZ PETROL DOO ZEMUN. Foreign retail chains are better positioned than domestic ones. They apply new business methods (multichannel sales - store and electronic, private label, sale of organic products, etc.) and the degree of digitization of the entire business is greater. In order to improve their positioning, trading companies in Serbia, in addition to adapting to general economic conditions, should apply modern concepts of cost, sales and profit management, the concept of customer management, the concept of managing product categories, the concept of sustainable development, etc. Likewise, to effectively manage human resources, assets, capital. All this contributes to the achievement of the target profit.

5.CONCLUSION

In Serbia, there is a significant difference between trading companies regarding the analyzed statistical variables (Financial and non-financial resources) treated as performance factors. So, for example, business income ranges from 37563.00 (LUKOIL Serbia) to 118913.00 (DELHIZE Sebia), net result ranges from 1629.00 (MERCATOR-S) to 4133.00 (LIDL Serbia), business assets range from 8969.00 (LUKOIL Serbia) to 83479.00 (DELHAIZE Serbia), the capital ranges from 0 (MERCATOR-S) to 42756.00 (DELHAIZE Serbia) and the number of employees ranges from 47.00 (OMV Serbia) to 11637.00 (DELHAIZE Serbia). Foreign retail chains have greater financial and non-financial resources at their disposal. In the specific case, there is a strong correlation between the number of employees and business income and business assets at the level of statistical significance. There is a significant correlation between capital and business income, net result and business assets. There is also a significant correlation between the net result and the number of employees. In addition to other things, the mentioned differences in available financial and non-financial resources affect in their own way the market and financial positioning of trading companies in Serbia. Multicriteria analysis (specifically the results of applying the DIBR-WASPAS method) in this paper showed that foreign retail chains are ranked better than domestic ones (DELHAIZE SERBIA DOO BELGRADE, LIDL SERBIA KD NOVA PAZOVA, MERCATOR-S DOO NOVI SAD, NELT CO. DOO BELGRADE, MOL SERBIA DOO BELGRADE, PHOENIX PHARMA DOO BELGRADE, MERCATA VT DOO NOVI SAD, OMV SERBIA DOO BELGRADE, LUKOIL SERBIA DOO BELGRADE and KNEZ PETROL DOO ZEMUN). They apply new business methods (multichannel sales - store and electronic, sale of organic products, private brand, concept of sustainable development (economic, social and environmental dimensions), higher level of digitalization of the entire business, etc. In Serbia, the application of multi-criteria decision-making methods (Fuzzy AHP - TOPSIS, ELECTRE, MABAC, OCRA, WASPAS, ARAS, MARCOS, TRUST, etc.) in evaluating the performance of trading companies in Serbia is insufficient. The application of these methods provides a more realistic evaluation of the performance of trading companies in relation to ratio analysis. For these reasons, it is recommended that they be applied as much as possible, individually or integrated, in addition to ratio analysis in the performance evaluation of trading companies in Serbia.

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