Analysis of Investment Efficiency of Distribution Trade of Selective Countries of the European Union and Serbia on the Basis of Trust Method

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Abstract
Investments are among the important factors in the business success of distribution trade. Given this, it is necessary to continuously investigate the factors of investment efficiency of distribution trade. The obtained results of the empirical research of the investment efficiency of the distribution trade of the selective countries of the European Union and Serbia show that Germany is in the first place. Next are France, Italy, Serbia, Bulgaria, Croatia, Hungary, Romania, Slovenia and Austria. In terms of investment efficiency, Serbia's distribution trade has taken a good position. In that respect, it is better in relation to the distribution trade between Croatia and Slovenia. This positioning of Serbia's distribution trade in terms of investment efficiency was influenced by the efficiency of human resources management, investments (investments of domestic and foreign retail chains), sales, margins and profits. Effective control of these and other relevant factors can achieve the target investment efficiency of distribution trade in Serbia.

Keywords: efficiency, factors, TRUST method, EU-Serbia distribution trade

Jel classification : L81, M31, M41, O32
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1. Introduction

It is very challenging to research the investment efficiency of distribution trade. With this in mind, the subject of research in this paper is the analysis of investment efficiency of distribution trade of selective countries of the European Union (Bulgaria, Germany, France, Croatia, Italy, Hungary, Austria, Romania and Slovenia) and Serbia. The goal and purpose of this is to look at the situation in terms of investment efficiency of distribution trade of the respective countries in the function of improvement in the future by taking relevant measures.

As for the literature dedicated to the development and application of multicriteria decision-making methods, it is very rich. Also, the literature is increasingly rich and dedicated to the specifics of the application of different methods of multi-criteria decision-making in evaluating the efficiency of distributive trade (Ersoy, 2017; Gaur, 2020; Görçün, 2022; Lukic, 2020, 2021a, b). But, regardless of that, when it comes to the TRUST method, it is, as far as we know, of

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a more recent date (Torkayesh et al., 2021). Given its specifics in relation to other methods of multicriteria decision-making, especially in terms of solving complex decision-making problems, in this paper it is used in evaluating the investment efficiency of distribution trade of selective countries of the European Union and Serbia.

The basic hypothesis of the research of the given problem in this paper is that knowing the most realistic situation is a prerequisite for improving the investment efficiency of distribution trade. In order to improve, it is necessary to continuously research and effectively control the factors of investment efficiency of distribution trade. The application of the TRUST method plays a significant role in this. The necessary empirical data for the research of the given problem in this paper were collected from Eurostat.

2. TRUST method

In relation to other methods of multicriteria decision-making, the TRUST (mulTi-noRmalization mUlti-distance aSsessmenT) method is specific. It is based on multi-normalization and multi-distance in solving complex decision- making problems. The multi-normalization techniques used are linear normalization based on ratio, normalization based on linear sum, linear normalization max-min and logarithmic normalization. Based on them, an aggregated normalized decision matrix is determined. Applying the TRUST method in multicriteria decision-making greatly increases the reliability (i.e., alleviates subjectivism) of normalization based on constraints (alternatives *and* in relation to criterion *j*) (Torkayesh, 2021). Euclidean, Manhattan, Lorentzian, and Pearson distance measures are used to determine the distance values of alternatives to the negative-ideal solution (Torkayesh, 2021). The TRUST method takes place procedurally through the following steps (Torkayesh, 2021):

Step 1: Determine the initial matrix. In this matrix, x_{ij} represents the initial performances of each alternative to each criterion.

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

Step 2: TRUST uses four normalization techniques to transform the initial decision matrix into a normalized decision matrix.

Step 2.1: Type-1 normalization attempts to calculate the normalized values of the initial decision based on a linear relationship as in the following equations (Keshavarz Ghorabaee, 2016):

$$x_{ij}^{a} = \frac{X_{ij}}{\max\limits_{i} X_{ij}} \quad IF\ j\ \in B \quad (2)$$

$$x_{ij}^{a} = \frac{\min_{i} X_{ij}}{X_{ij}} \quad IF\ j \in C \quad (3)$$

where it x_{ij}^{a}represents the elements of the normalized decision matrix in relation to the normalization of type - 1, B denotes the benefit and C the cost criterion, respectively.

Step 2.2: Normalization of type - 2 using a linear sum-based technique to normalize the elements of the initial decision matrix as in the following equations (Wen, 2020):

$$x_{ij}^{b} = \frac{X_{ij}}{\sum_{i=1}^{m} X_{ij}} \quad IF\ j \in B \quad (4)$$

$$x_{ij}^{b} = \frac{\frac{1}{x_{ij}}}{\sum_{i=1}^{m} \frac{1}{x_{ij}}} \quad IF\ j\ \in C \quad (5)$$

where it x_{ij}^{b}represents the elements of the normalized decision matrix in relation to the normalization of type - 2, B denotes the benefit and C the cost criterion, respectively.

Step 2.3: Normalization of type - 3 using the linear-min linear technique to normalize the elements of the initial decision matrix as in the following equations (Yazdani, 2019):

$$x_{ij}^{c} = \frac{\left(X_{ij} - \min_{i} X_{ij}\right)}{\left(\max_{i} X_{ij} - \min_{i} X_{ij}\right)} \ IF\ j\ \in B \quad (6)$$

$$x_{ij}^{c} = \frac{\left(\max_{i} X_{ij} - X_{ij}\right)}{\left(\max_{i} X_{ij} - \min_{i} X_{ij}\right)} \quad IF\ j\ \in C \quad (7)$$

where it x_{ij}^{c}represents the elements of the normalized decision matrix in relation to the normalization of type - 3, B denotes the benefit and C the cost criterion, respectively.

Step 2.4: Finally, type - 4 normalization uses the logarithmic technique to normalize the elements of the initial decision matrix as in the following equations (Zolfani, 2020)

$$x_{ij}^{d} = \frac{\log\left(X_{ij}\right)}{\log\left(\prod_{i=1}^{m} X_{ij}\right)} \quad (8)$$

where it x_{ij}^{d}represents the elements of the normalized decision matrix in relation to the normalization of type - 4.

Step 2.5: All normalized matrices were aggregated using four parameters $a_i$to construct an aggregated normalized decision matrix. Aggregation is performed using the following equation

$$h_{ij} = a_1X_{ij}^a + a_2X_{ij}^b + a_3X_{ij}^c + a_4X_{ij}^d \quad (9)$$

where the sum of all values $a_i$must be equal to one as in the following equation

$$a_1 + a_2 + a_3 + a_4 = 1 \quad (10)$$

Step 3: Based on preliminary constraints, the initial decision matrix is used to generate the satisfaction degree matrix (Abdeli et al., 2019, 2020). The satisfaction degree matrix is derived based on the limit values of the criteria. The elements of the satisfaction degree matrix are shown with f_{ij}. Constraint-based normalization procedure procedures are presented as follows.

Based on expert opinion, or on real data in the matrix X, $X_j^{min} = Min(X_{ij})$and $X_j^{max} = Max\,(X_{ij})$ represent the minimum and maximum values.

Step 3.1: The constraint values for each criterion can be determined by decision makers based on their experience or the technical characteristics of each of the criteria. The constraint value is represented as an interval number $[LB_j, UB_j]$, where it LB_jindicates the lower limit of the limit value of criterion *j*, and $UB_j$the upper limit of the limit value of criterion *j*. The constraint values must be within $x_j^{min}$and $x_j^{max}$the values as in the following equation

$$Co_j = (LB_j, UB_j) \subseteqq [x_j^{min}, x_j^{max}] \quad (11)$$

Step 3.2: Calculate the degree of satisfaction of the initial decision matrix based on constraints. The second version of the initial decision matrix is considered as *F*. In this matrix, F_{ij}it represents the degree of satisfaction of the constraint of the alternative *i* in relation to the limited value of criterion *j* . The elements of the matrix *F* can be determined as in the following equation

For benefit criteria

$$f_{ij} = 1, if\ X_{ij} \in [LB_j, UB_j] \quad (12)$$

$$F_{ij} = 1 - \frac{LB_{ij} - X_{ij}}{Max\,(LB_j - X_j^{min}, X_j^{max} - UB_j) + 1}, if\ X_{ij} \in [X_j^{min}, UB_j] \quad (13)$$

$$f_{ij} = 1 - \frac{1 - UB_j + X_{ij}}{Max\,(LB_j - X_j^{min}, X_j^{max} - UB_j) + 1}, if\ X_{ij} \in [UB_j, X_j^{max}] \quad (14)$$

For cost criteria

$$f_{ij} = \frac{1}{Max\left(LB_j - X_j^{min}, X_j^{max} - UB_j\right) + 1}, if\ X_{ij} \in \left[LB_j, UB_j\right] \quad (15)$$

$$f_{ij} = \frac{LB_j - X_{ij}}{Max\left(LB_j - X_j^{min}, X_j^{max} - UB_j\right)}, if\ X_{ij} \in \left[X_j^{min}, LB_j\right] \quad (16)$$

$$f_{ij} = \frac{X_{ij} - UB_1}{Max\left(LB_j - X_j^{min}, X_j^{max} - UB_j\right)}, if\ X_{ij} \in \left[UB_j, X_j^{max}\right] \quad (17)$$

Step 4: The aggregated normalized decision matrix and the constraint satisfaction degree matrix were used to generate the constrained aggregate normalized decision matrix as in the following equation. Elements of the constrained aggregate normalized decision matrix $Y = \left[y_{ij}\right]_{n*m}$ are shown with y_{ij}.

$$y_{ij} = f_{ij} h_{ij} \quad (18)$$

Step 5: The constrained aggregate normalized decision matrix is multiplied by the weight vector included in the criteria to generate a weight constrained aggregate normalized matrix $G = \left[g_{ij}\right]_{n*m}$ as in the following equation

$$g_{ij} = y_{ij} w_j \quad (19)$$

where it g_{ij} represents the elements of the weighted matrix, and the w_j weight of the criterion *j*.

Step 6: Determination of the negative-ideal solution of the weighted matrix *G* according to the following equation

$$\square_j = \min_i g_{ij} \quad (20)$$

where it $\square_j$ means a negative-ideal solution of criterion *j*.

Step 7: TRUST applies a two-step operation to calculate the distance of the alternative from the negative-ideal solution.

Step 7.1: In Phase 1, Euclidean and Manhattan distance measures are used as in the following equations

$$E_i = \sqrt{\sum_{i=1}^{m} \left(g_{ij} - ▯_j\right)^2} \quad 21)$$

$$T_i = \sum_{i=1}^{m} \left|g_{ij} - ▯_j\right| \quad 22)$$

Step 7.2: In phase 2, the Lorentzian distance measure and the Pearson distance measure are used to calculate the distance of the alternative from the negative-ideal solution as in the following equations (Cha, 2008)

$$L_i = \sum_{i=1}^{m} \log\left(1 + \left|g_{ij} - ▯_j\right|\right) \quad (23)$$

$$P_i = \sum_{i=1}^{m} \frac{\left(g_{ij} - ▯_j\right)^2}{▯_j} \quad (24)$$

Step 8: According to the distance measures, the two relative estimates of the distance matrix, as in the following equations, were constructed as $ET = \left|\theta_{ij}\right|_{n*n}$well $LP = \left|\varphi_{ij}\right|_{n*n}$, respectively.

$$\theta_{ik} = (E_i - E_k) + \left((E_i - E_k) * (T_i - T_k)\right) \quad (25)$$
$$\varphi_{ik} = (L_i - L_k) + \left((L_i - L_k) * (P_i - P_k)\right) \quad (26)$$

where $k \in \{1,2, \dots, n\}$.

Step 9: The combined result for each alternative, Ω_i, is calculated as in the following equation

$$\Omega_i = \beta \sum_{k=1}^{n} \theta_{ik} + (1 - \beta) \sum_{k=1}^{n} \varphi_{ik} \quad (27)$$

where it βrepresents the parameter used to calculate the combined distance estimate using two relative matrix distance estimates. β is a negative parameter less than 1 that usually takes a value of 0.5 in decision problems. The alternatives are ranked based on their combined distance score Ω_i, in descending order, so that the alternative with the highest value $\Omega_i$is considered the best alternative.

3. Results and discussion

In this paper, for the purposes of measuring the investment efficiency of distribution trade of selective countries of the European Union and Serbia, the following criteria were used: C1 – persons employed - number, C2 - gross investment in tangible goods, C3 - investment per person employed, C4 - investment rate, C5 - turnover, C6 - gross margin and C7 - value added at factor cost. These criteria were chosen because they measure well the investment efficiency of distributive trade and its impact on financial performance. Alternative countries were observed: A1 - Bulgaria, A2 - Germany, A3 - France, A4 - Croatia, A5 - Italy, A6 - Hungary, A7 - Austria, A8 - Romania, A9 - Slovenia and A10 - Serbia. The selection of European Union countries was made according to which countries are the most developed and closer to the Serbian environment. Table 1 shows the initial data for 2019.

Table 1. Initial data

	Persons employeed - number	Gross investment in tangible goods (million euro)	Investment per person employed (thousands euro)	Investment rate (investment / value added at factor cost) - percentage	Turnover (million euro)	Gross margin (million euro)	Value added at factor cost (million euro)
Bulgaria	517483	1241.1	2.4	18.0	68652.6	9913.3	6886.9
Germany	6586606	33021.6	5.0	9.9	2120631.8	513781.9	334928.6
France	3364306	25085.4	7.5	13.0	1383306.8	303984.9	192661.8
Croatia	243616	728.0	3.0	12.1	38540.3	8223.2	6002.3
Italy	3418330	12946.6	3.8	8.9	1003893.9	208319.8	145338.7
Hungary	592554	2195.1	3.7	16.6	106833.8	20743.5	13206.6
Austria	685256	4900.1	7.2	12.5	253998.2	58965.0	39256.3
Romania	914741	4264.1	4.7	23.1	128519.6	26081.5	18488.4
Slovenia	122344	699.3	5.7	14.6	37113.5	6460.1	4790.2
Serbia	267810	562.8	2.1	14.4	35858.9	4886.9	3906.9
Statistics							
Mean	1671304.6000	8564.4100	4.5100	14.3100	517734.9400	116136.0100	76546.6700
Median	638905.0000	3229.6000	4.2500	13.7000	117676.7000	23412.5000	15847.5000
Std. Deviation	2121990.61600	11564.86391	1.87288	4.14741	733275.21410	173114.92300	112548.31370
Minimum	122344.00	562.80	2.10	8.90	35858.90	4886.90	3906.90
Maximum	6586606.00	33021.60	7.50	23.10	2120631.80	513781.90	334928.60

Note: Statistics were calculated using SPSS software

Source: Eurostat

Table 2 shows the correlation matrix of the initial data.

Table 2. Correlations

Correlations								
		1	**2**	**3**	**4**	**5**	**6**	**7**
1 Persons employeed - number	Pearson Correlation	1	.963**	.292	-.535	.986**	.987**	.991**
	Sig. (2-tailed)		.000	.413	.111	.000	.000	.000
	N	10	10	10	10	10	10	10
2 Gross investment in tangible goods	Pearson Correlation	.963**	1	.462	-.490	.990**	.989**	.985**
	Sig. (2-tailed)	.000		.179	.150	.000	.000	.000
	N	10	10	10	10	10	10	10
3 Investment per person employed	Pearson Correlation	.292	.462	1	-.166	.391	.385	.373
	Sig. (2-tailed)	.413	.179		.647	.263	.273	.288
	N	10	10	10	10	10	10	10
4 Investment rate	Pearson Correlation	-.535	-.490	-.166	1	-.566	-.557	-.567
	Sig. (2-tailed)	.111	.150	.647		.088	.094	.088
	N	10	10	10	10	10	10	10
5 Turnover	Pearson Correlation	.986**	.990**	.391	-.566	1	.998**	.998**
	Sig. (2-tailed)	.000	.000	.263	.088		.000	.000
	N	10	10	10	10	10	10	10
6 Gross margin	Pearson Correlation	.987**	.989**	.385	-.557	.998**	1	.999**
	Sig. (2-tailed)	.000	.000	.273	.094	.000		.000
	N	10	10	10	10	10	10	10
7 Value added at factor cost	Pearson Correlation	.991**	.985**	.373	-.567	.998**	.999**	1
	Sig. (2-tailed)	.000	.000	.288	.088	.000	.000	
	N	10	10	10	10	10	10	10
**. Correlation is significant at the 0.01 level (2-tailed).								

Note: Statistics were calculated using SPSS software

Thus, there is a strong correlation between the number of employees and gross investment in tangible goods, on the one hand, and turnover, gross margin and value added at factor costs, on the other hand, at the level of statistical significance. This means, in other words, that efficient management of human resources and gross investment in tangible goods can achieve the target financial performance.

Table 3 shows the Friedman test.

Table 3. Friedman Test

NPar Tests	
Friedman Test	
Ranks	
	Mean Rank
1 Persons employeed - number	7.00
2 Gross investment in tangible goods	3.00
3 Investment per person employed	1.00
4 Investment rate	2.00
5 Turnover	6.00
6 Gross margin	5.00
7 Value added at factor cost	4.00
Test Statistics[a]	
N	10
Chi-Square	60.000
df	6
Asymp. Sig.	.000
a. Friedman Test	

Note: Statistics were calculated using SPSS software

The Friedman test shows that there is a significant statistical difference between the given parameters. That is, the null hypothesis that there is no significant statistical difference between them is rejected.

In the distribution trade of Germany and France, investments are higher per employee than in Romania. Investments per employee in Romania's distribution trade are higher than in Italy. Investments per employee in Romania's distribution trade are above average, which is not the case in Serbia. In the distribution trade of Serbia, investments per employee are less than in Croatia and Slovenia. They are also smaller than Romania's distribution trade. The investment rate in Romania's distribution trade is significantly higher than in all the observed countries, which in a winning way reflected on its efficiency and financial performance. The financial performance of Romania's distribution trade, measured by gross margin, is better than in Bulgaria, Croatia, Hungary, Slovenia and Serbia, but is worse than in Germany, France, Italy and Austria.

Investments per employee in the distribution trade of Germany, France and Italy are higher than in Serbia. The investment rate in Serbia's distribution trade is higher than in Germany, France and Italy. It is higher than in Croatia, but slightly lower than in Slovenia. The rate of investment in Serbia's distribution trade is slightly higher than average. All this had an appropriate effect on the efficiency and financial performance of distribution trade in Serbia. Gross margin in Serbia's distribution trade is lower than in Croatia and Slovenia.

The parameters of *ai* used in the TRUST model are shown below:

Parameters of ai	
a1	**0.25**
a2	**0.25**
a3	**0.25**
a4	**0.25**
β	**0.5**

The weighting coefficients of the criteria were determined using the AHP (Analytical Hierarchical Process) method (Saaty, 2008). They are shown in Table 2.

Tables 4 - 13 show the obtained results of the analysis of investment efficiency of selective countries of the European Union and Serbia using the TRUST method. (The calculation was performed using TRUSTSoftware-Excel.)

Table 4. Initial Matrix

Initial Matrix							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
A1	517483	1241.1	2.4	18	68652.6	9913.3	6886.9
A2	6586606	33021.6	5	9.9	2120632	513781.9	334929
A3	3364306	25085.4	7.5	13	1383307	303984.9	192662
A4	243616	728	3	12.1	38540.3	8223.2	6002.3
A5	3418330	12946.6	3.8	8.9	1003894	208319.8	145339
A6	592554	2195.1	3.7	16.6	106833.8	20743.5	13206.6
A7	685256	4900.1	7.2	12.5	253998.2	58965	39256.3
A8	914741	4264.1	4.7	23.1	128519.6	26081.5	18488.4
A9	122344	699.3	5.7	14.6	37113.5	6460.1	4790.2
A10	267810	562.8	2.1	14.4	35858.9	4886.9	3906.9

Constraint Values	**Criteria**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
	LBj	min	6	6	min	6.5	5	min	6.5	5	2.5
	Ubj	max	max	7.5	max	max	max	max	max	max	4

MAX	6586606.000	33021.600	7,500	23.100	2120631.800	513781.900	334928.600
MIN	122344.000	562.800	2,100	8.900	35858.900	4886,900	3906,900
MAX-MIN	6464262.000	32458.800	5400	14.200	2084772.900	508895.000	331021.700

Table 5. Type - 1 Normalized Matrix

Type-1 Normalized Matrix							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
A1	0.0786	0.0376	0.3200	0.7792	0.0324	0.0193	0.0206
A2	1.0000	1.0000	0.6667	0.4286	1.0000	1.0000	1.0000
A3	0.5108	0.7597	1.0000	0.5628	0.6523	0.5917	0.5752
A4	0.0370	0.0220	0.4000	0.5238	0.0182	0.0160	0.0179
A5	0.5190	0.3921	0.5067	0.3853	0.4734	0.4055	0.4339
A6	0.0900	0.0665	0.4933	0.7186	0.0504	0.0404	0.0394
A7	0.1040	0.1484	0.9600	0.5411	0.1198	0.1148	0.1172
A8	0.1389	0.1291	0.6267	1.0000	0.0606	0.0508	0.0552
A9	0.0186	0.0212	0.7600	0.6320	0.0175	0.0126	0.0143
A10	0.0407	0.0170	0.2800	0.6234	0.0169	0.0095	0.0117

Table 6. Type - 2 Normalized Matrix

Type-2 Normalized Matrix							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
A1	0.0310	0.0145	0.0532	0.1258	0.0133	0.0085	0.0090
A2	0.3941	0.3856	0.1109	0.0692	0.4096	0.4424	0.4375
A3	0.2013	0.2929	0.1663	0.0908	0.2672	0.2617	0.2517
A4	0.0146	0.0085	0.0665	0.0846	0.0074	0.0071	0.0078
A5	0.2045	0.1512	0.0843	0.0622	0.1939	0.1794	0.1899
A6	0.0355	0.0256	0.0820	0.1160	0.0206	0.0179	0.0173
A7	0.0410	0.0572	0.1596	0.0874	0.0491	0.0508	0.0513
A8	0.0547	0.0498	0.1042	0.1614	0.0248	0.0225	0.0242
A9	0.0073	0.0082	0.1264	0.1020	0.0072	0.0056	0.0063
A10	0.0160	0.0066	0.0466	0.1006	0.0069	0.0042	0.0051

Table 7. Type - 3 Normalized Matrix

Type-3 Normalized Matrix							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	C2	C3	C4	C5	C6	C7
A1	0.0611	0.0209	0.0556	0.6408	0.0157	0.0099	0.0090
A2	1.0000	1.0000	0.5370	0.0704	1.0000	1.0000	1.0000
A3	0.5015	0.7555	1.0000	0.2887	0.6463	0.5877	0.5702
A4	0.0188	0.0051	0.1667	0.2254	0.0013	0.0066	0.0063
A5	0.5099	0.3815	0.3148	0.0000	0.4643	0.3998	0.4273
A6	0.0727	0.0503	0.2963	0.5423	0.0340	0.0312	0.0281
A7	0.0871	0.1336	0.9444	0.2535	0.1046	0.1063	0.1068
A8	0.1226	0.1140	0.4815	1.0000	0.0444	0.0416	0.0440
A9	0.0000	0.0042	0.6667	0.4014	0.0006	0.0031	0.0027
A10	0.0225	0.0000	0.0000	0.3873	0.0000	0.0000	0.0000

Table 8. Type - 4 Normalized Matrix

Type-4 Normalized Matrix							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	C2	C3	C4	C5	C6	C7
A1	0.0967	0.0878	0.0615	0.1101	0.0920	0.0880	0.0875
A2	0.1154	0.1282	0.1130	0.0873	0.1204	0.1257	0.1260
A3	0.1105	0.1248	0.1414	0.0977	0.1168	0.1207	0.1205
A4	0.0912	0.0812	0.0771	0.0950	0.0873	0.0862	0.0862
A5	0.1106	0.1167	0.0937	0.0833	0.1142	0.1171	0.1177
A6	0.0977	0.0948	0.0918	0.1070	0.0957	0.0950	0.0940
A7	0.0988	0.1047	0.1386	0.0962	0.1028	0.1050	0.1048
A8	0.1009	0.1030	0.1086	0.1196	0.0972	0.0972	0.0973
A9	0.0861	0.0807	0.1222	0.1021	0.0869	0.0839	0.0839
A10	0.0919	0.0780	0.0521	0.1016	0.0867	0.0812	0.0819

Table 9. Aggregated Normalized Matrix (hij)

Aggregated Normalized Matrix (hij)							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
A1	0.0668	0.0402	0.1226	0.4140	0.0383	0.0314	0.0315
A2	0.6274	0.6284	0.3569	0.1639	0.6325	0.6420	0.6409
A3	0.3310	0.4832	0.5769	0.2600	0.4207	0.3905	0.3794
A4	0.0404	0.0292	0.1776	0.2322	0.0285	0.0290	0.0296
A5	0.3360	0.2604	0.2499	0.1327	0.3115	0.2754	0.2922
A6	0.0740	0.0593	0.2409	0.3710	0.0502	0.0461	0.0447
A7	0.0827	0.1110	0.5507	0.2446	0.0941	0.0942	0.0950
A8	0.1043	0.0990	0.3302	0.5703	0.0568	0.0530	0.0552
A9	0.0280	0.0286	0.4188	0.3094	0.0281	0.0263	0.0268
A10	0.0428	0.0254	0.0947	0.3032	0.0276	0.0237	0.0247

Criteria	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
LBj	122344.000	6.000	6.000	8.900	6.500	5.000	3906.900	6.500	5.000	2.500
UBj	6586606.000	33021.600	7.500	23.100	2120632.800	513781.900	334929.600	0.000	0.000	4,000
MAX (LBj-Xmin, Xmax-Ubj)	**0.000**	**0.000**	**3.900**	**0.000**	**0.000**	**0.000**	**0.000**	**6.500**	**5.000**	**2.500**

Table 10. Satisfaction Degree Values

Satisfaction Degree Values							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
A1	1.0000	1.0000	0.2653	1.0000	1.0000	1.0000	1.0000
A2	1.0000	1.0000	0.7959	1.0000	1.0000	1.0000	1.0000
A3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
A4	1.0000	1.0000	0.3878	1.0000	1.0000	1.0000	1.0000
A5	1.0000	1.0000	0.5510	1.0000	1.0000	1.0000	1.0000

Satisfaction Degree Values							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	C2	C3	C4	C5	C6	C7
A6	1.0000	1.0000	0.5306	1.0000	1.0000	1.0000	1.0000
A7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
A8	1.0000	1.0000	0.7347	1.0000	1.0000	1.0000	1.0000
A9	1.0000	1.0000	0.9388	1.0000	1.0000	1.0000	1.0000
A10	1.0000	1.0000	0.2041	1.0000	1.0000	1.0000	1.0000

Table 11. Constrained Aggregated Normalized Matrix (yij)

Constrained Aggregated Normalized Matrix (yij)							
weights of criteria	0.2173	0.1627	0.0906	0.1456	0.1246	0.1247	0.1346
kind of criteria	1	1	1	1	1	1	1
	C1	C2	C3	C4	C5	C6	C7
A1	0.0668	0.0402	0.0325	0.4140	0.0383	0.0314	0.0315
A2	0.6274	0.6284	0.2841	0.1639	0.6325	0.6420	0.6409
A3	0.3310	0.4832	0.5769	0.2600	0.4207	0.3905	0.3794
A4	0.0404	0.0292	0.0689	0.2322	0.0285	0.0290	0.0296
A5	0.3360	0.2604	0.1377	0.1327	0.3115	0.2754	0.2922
A6	0.0740	0.0593	0.1278	0.3710	0.0502	0.0461	0.0447
A7	0.0827	0.1110	0.5507	0.2446	0.0941	0.0942	0.0950
A8	0.1043	0.0990	0.2426	0.5703	0.0568	0.0530	0.0552
A9	0.0280	0.0286	0.3932	0.3094	0.0281	0.0263	0.0268
A10	0.0428	0.0254	0.0193	0.3032	0.0276	0.0237	0.0247

Table 12. Weighted Constrained Aggregated Normalized Matrix (gij)

Weighted Constrained Aggregated Normalized Matrix (gij)							
	C1	C2	C3	C4	C5	C6	C7
A1	0.0145	0.0065	0.0029	0.0603	0.0048	0.0039	0.0042
A2	0.1363	0.1022	0.0257	0.0239	0.0788	0.0801	0.0863
A3	0.0719	0.0786	0.0523	0.0379	0.0524	0.0487	0.0511
A4	0.0088	0.0048	0.0062	0.0338	0.0036	0.0036	0.0040
A5	0.0730	0.0424	0.0125	0.0193	0.0388	0.0343	0.0393

Weighted Constrained Aggregated Normalized Matrix (gij)							
A6	0.0161	0.0096	0.0116	0.0540	0.0063	0.0057	0.0060
A7	0.0180	0.0181	0.0499	0.0356	0.0117	0.0117	0.0128
A8	0.0227	0.0161	0.0220	0.0830	0.0071	0.0066	0.0074
A9	0.0061	0.0046	0.0356	0.0450	0.0035	0.0033	0.0036
A10	0.0093	0.0041	0.0018	0.0442	0.0034	0.0030	0.0033

Negative-Ideal Solution	Criteria	C1	C2	C3	C4	C5	C6	C7
	ηи	0.0061	0.0041	0.0018	0.0193	0.0034	0.0030	0.0033

Table 13. Results

Results									
	Alternatives	**Ei**	**Ti**	**Li**	**Pi**	**ET(Θi)**	**LP(φi)**	**Ωi**	**Ranking**
Bulgaria	**A1**	0.0419	0.0562	0.0240	0.1018	-0.2045	2.4752	1.1354	**5**
Germany	**A2**	0.2138	0.4923	0.2045	11.1757	1.9545	15.9245	8.9395	**1**
France	**A3**	0.1398	0.3518	0.1487	5.6202	0.8728	5.7157	3.2942	**2**
Croatia	**A4**	0.0154	0.0237	0.0102	0.0239	-0.4245	2.6702	1.1228	**6**
Italy	**A5**	0.0979	0.2186	0.0929	2.2418	0.3392	2.3114	1.3253	**3**
Hungary	**A6**	0.0381	0.0683	0.0294	0.1484	-0.2433	2.3999	1.0783	**7**
Austria	**A7**	0.0562	0.1168	0.0500	1.4809	-0.0871	1.9811	0.9470	**10**
Romania	**A8**	0.0702	0.1239	0.0528	0.5372	0.0479	2.1047	1.0763	**8**
Slovenia	**A9**	0.0425	0.0608	0.0260	0.6898	-0.2006	2.2239	1.0117	**9**
Serbia	**A10**	0.0250	0.0280	0.0120	0.0336	-0.3432	2.6438	1.1503	**4**

Figure 1 shows the ranking.

Based on the obtained results of the empirical research of the investment efficiency of the distribution trade of the selective countries of the European Union and Serbia, it can be concluded that the distribution trade of Germany is in the first place in terms of investment efficiency. Next are France, Italy, Serbia, Bulgaria, Croatia, Hungary, Romania, Slovenia and Austria. The most developed countries of the European Union (Germany, France, and Italy) have the best investment efficiency in distribution trade.

In terms of investment efficiency of distribution trade, Romania is ranked eighth. The investment efficiency of distribution trade in Romania is lower than in Germany, France and Italy. It is better compared to Austria and Slovenia. This was reflected in an appropriate way in her financial performance.

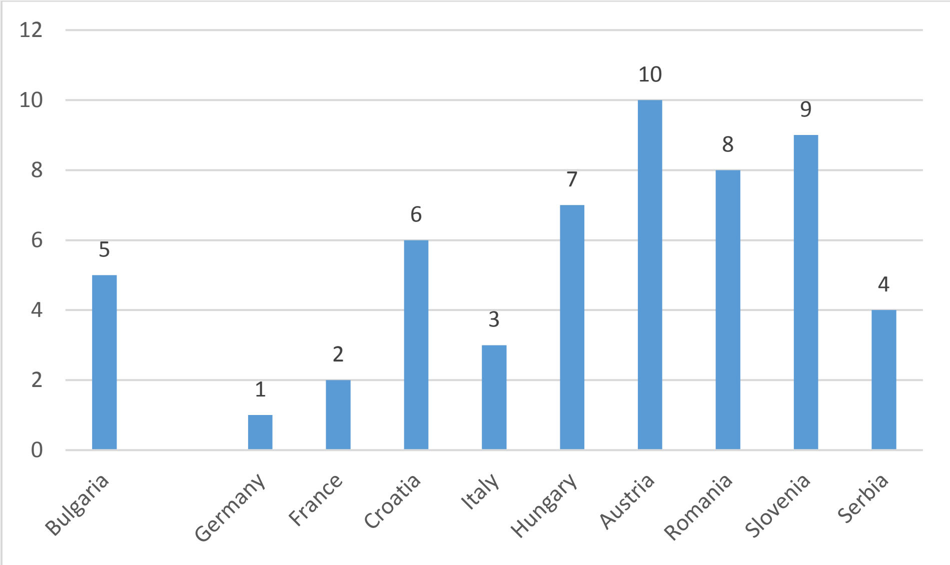

Figure 1. Ranking

In terms of investment efficiency, Serbia's distribution trade has taken a good position. In this respect, it is better in relation to the distribution trade of the surrounding countries (Bulgaria, Croatia, Hungary, Romania, Slovenia and Austria). This had a positive effect on her financial performance.

The presented positioning of distribution trade in terms of investment efficiency of the observed countries was influenced by human resource management, investment (domestic and foreign retail chains), sales management, margin and profit. Effective control of these and other relevant factors can achieve the target investment efficiency of distribution trade.

In relation to the ratio analysis, the application of the TRUST method provides a more realistic ranking of distribution trade in terms of investment efficiency by individual countries. Therefore, it is recommended.

4. Conclusion

Based on the conducted empirical research using statistical analysis and the TRUST method, the following can be concluded:

1. In the distribution trade of Germany and France, investments are higher per employee than in Romania. Investments per employee in Romania's distribution trade are higher than in Italy. Investments per employee in Romania's distribution trade are above average, which is not the case in Serbia. In the distribution trade of Serbia, investments per employee are less than in Croatia and Slovenia. They are also smaller than Romania's distribution trade. The investment rate in Romania's distribution trade is significantly higher than in all the observed countries, which in a winning way reflected on its efficiency and financial performance. The financial performance of Romania's distribution trade, measured by gross margin, is better

than in Bulgaria, Croatia, Hungary, Slovenia and Serbia, but is worse than in Germany, France, Italy and Austria.

2. Investments per employee in the distribution trade of Germany, France and Italy are higher than in Serbia. The investment rate in Serbia's distribution trade is higher than in Germany, France and Italy. It is higher than in Croatia, but slightly lower than in Slovenia. The rate of investment in Serbia's distribution trade is slightly higher than average. All this had an appropriate effect on the efficiency and financial performance of distribution trade in Serbia. Gross margin in Serbia's distribution trade is lower than in Croatia and Slovenia.

3. The obtained results of the empirical research of investment efficiency of distribution trade of selective countries of the European Union and Serbia show that the distribution trade of Germany is in the first place in terms of investment efficiency. Next are France, Italy, Serbia, Bulgaria, Croatia, Hungary, Romania, Slovenia and Austria. The most developed countries of the European Union (Germany, France, and Italy) are best positioned in terms of investment efficiency and distribution trade.

4. The investment efficiency of distribution trade in Romania is lower than in Germany, France and Italy. It is better compared to Austria and Slovenia. This was reflected in an appropriate way in her financial performance.

5. In terms of investment efficiency, Serbia's distribution trade has taken a good position. In this respect, it is better in relation to the distribution trade of the surrounding countries (Bulgaria, Croatia, Hungary, Romania, Slovenia and Austria).

6. The presented positioning of distribution trade in terms of investment efficiency of the observed countries was influenced by efficient management of human resources, investment (domestic and foreign retail chains), sales, margins and profits. Effective control of these and other relevant factors can achieve the target investment efficiency in the distribution trade of the observed countries. The effect of this is to improve financial performance.

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