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INVESTMENT OPPORTUNITIES EVALUATION: A COMPARATIVE ANALYSIS AND THE MULTI-CRITERIA RANKING OF TOP-LISTED COMPANIES

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Investors are faced with the challenge of identifying the most promising companies for their potential investment in the stock market. This research study aims to propose a systematic approach to the selection of top-listed companies for investment, focusing on the two levels of analysis - the ratio analysis based on liquidity and profitability, and the multi-criteria ranking using the PROMETHEE method. The observed companies are divided into two groups: group A, which includes companies with a PE ratio above 50, and group B, which includes companies with a PE ratio below 5. The findings of the study highlight the fact that companies with higher PE ratios tend to exhibit better overall business performance as observed on an individual basis and based on the ratio analysis. Although there are noticeable differences in the ratio indicators between the companies, these differences are not significant when the overall review is considered. The combination of ratio analysis and the PROMETHEE method provides an effective method for evaluating their business performance, giving guidance to investors and decision-makers in selecting the most promising investment opportunities. The results of the multi-criteria ranking show that the companies that belong to group B have a better rank than the others, and that investors should invest in the companies Vale S.A. and Tesla, Inc. as well.

Keywords: ratio analysis, PROMETHEE method, stock market, investment, comparative analysis

JEL Classification: G11, M49

INTRODUCTION

In the global marketplace, many companies list their shares on the stock exchange. Some of them have suffered severe losses in many crises and market disruptions over the past decade. However, this has yet to contribute to the withdrawal of companies from the global market. The fact that they have survived even during the market disruption caused by many crises shows they are strong and financially sound businesses. With publicly available information about companies, their performances can easily be

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monitored and analyzed. Business performance analysis is considered to be very important to various stakeholders, especially to investors.

To decide where to invest, many investors conduct several analyses so as to become more knowledgeable of the operations of the companies they might invest in. Investors have a variety of ways to evaluate the performance of companies they are considering for investment. They can follow companies' business by analyzing their stock market operations, which is possible today, considering the fact that many stock exchanges publicly reveal such data. Although information is still costly, there are some resources that can be acquired with the minimal investment of time and money. Yahoo's Finance is the website that provides this kind of information free of charge. This website specializes in providing information about the companies whose shares are traded on the stock exchange. On the website itself, there are several possibilities for searching, monitoring, and analyzing selected companies. Beside the information on the volume of trade, the basic information about the companies and the most important company financial reports is also available. Thus, investors can find almost everything they need in one place.

In this paper, a comparative analysis of the companies whose shares are traded the most on the stock exchange is performed. The two groups of companies were created according to the height of the PE ratio (the profit/earnings ratio). Based on the selected companies, the ratio numbers were calculated, which were then used as the input parameters for the multi-criteria ranking. The multi-criteria ranking was conducted in order to determine which company to invest in among the selected ones. The structure of the paper is as follows: after a brief literature review, the research model and the methodology used in this research study are presented together with the research hypothesis and the research data. Then, the results of the ratio analysis that present the input data for a further analysis are discussed, after which reduction in the criteria for a further analysis is explained. Finally, the results of the multi-criteria ranking performed using the PROMETHEE method is presented and analyzed. The results of the multi-criteria ranking can be used by investors to enable them to decide which company to invest in.

LITERATURE REVIEW

Ratio analysis and multi-criteria ranking are useful tools that can be used in various situations. While ratio analysis strictly relates to financial problems, multi-criteria ranking, such as the PROMETHEE method, has a much broader use. Therefore, there are a lot of papers methodologically structured based on these tools in economics and managerial issues (Arsić, Nikolić & Jevtić, 2021; Jevtić, Radojičić & Jemović, 2022a).

The analysis of the literature enables the identification of many groups of authors who have dealt with ratio analysis in their research studies. The primary use of ratio analysis is to evaluate company performance (Delen, Kuzey & Uyar, 2013; Husna & Satria, 2019).

In their research studies, some groups of authors most often use the following groups of ratios: profitability ratios, liquidity ratios, efficiency ratios, and financial leverage ratios (Innocent, Mary & Matthew, 2013; Yuniningsih, Pertiwi & Purwanto, 2019; Terdpaopong, Rickards & Manapreechadeelert, 2020; Jevtić, Radojičić & Jemović, 2022b). However, as the list of ratio numbers is broad, so the selection of individual ratio numbers varies among the authors. Some authors focus on only one group of ratio numbers, such as profitability ratios (Mijić, Zekić & Jakšić, 2017; Domanović, Vujičić & Ristić, 2018; Bunea, Corbos & Popescu, 2019; Tadić, Jevtić & Jančev, 2019; Husain, Sarwani, Sunardi & Lisdawati, 2020). Profitability ratios are considered to be an important tool in macroeconomic analysis.

Ratio analysis is an essential tool in analyzing business performance for both companies and banks. Therefore, it is used by certain groups of authors in their research so as to enable them to measure bank performance (Đukić & Novićević, 2013; Kevser & Leyli, 2019).

In the literature, there are researchers who use ratio analysis results to conduct correlation analysis

(Mohamad & Saad, 2010; Alarussi & Alhaderi, 2018), on the one hand, whereas on the other, there are authors who combine ratio analysis with other business indicators to carry out correlation analysis (Sondakh, 2019; Nguyen & Nguyen, 2020). Some of them analyze the impact of debt and profitability on stock prices (Saputra, 2022), whereas others are focused on the factors that affect profitability (Burja, 2011). Certain authors use the PROMETHEE method to make significant financial and business decisions (Durkalić, Furtula & Borisavljević, 2019; Mousavi & Lin, 2020; Marcu, Duta & Manea, 2022). Ratio analysis and the PROMETHEE method are combined by certain groups of authors so as to conduct comparative analysis based on specific criteria (Krstić, Fedajev & Nikolić, 2018; Fedajev, Jevtić & Nikolić, 2020; Jevtić *et al*, 2022a).

The literature review shows that some papers combine ratio analysis and multi-criteria ranking. It should also be highlighted that there is no paper comparing business performances for the chosen companies, which is the reason why the contribution of this paper precisely reflects in the fact that it enables the identification of both success indicators and business limitations of the multinational companies through the application of multi-criteria analysis and ranking. Using the results obtained as the starting point, other companies' results and performance indicators can be compared.

DATA AND METHODOLOGY

The defined goal of this study was examined using the applied research model presented in Figure 1.

To conduct a comparative analysis of business operations with the most active stocks on the market for international companies using multicriteria ranking, the following two samples are selected (Table 1).

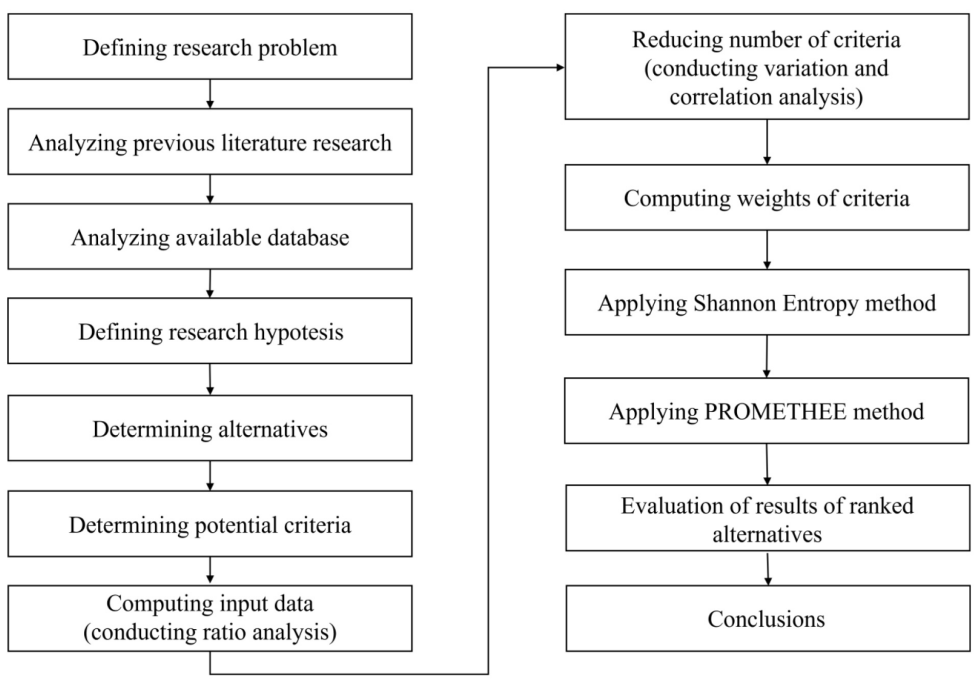

Figure 1 The defined research model

Source: Authors

Table 1 The list of the selected companies

Group A (the companies whose PE ratio is above 50)		
Code	*Name*	*PE ratio*
TSLA	Tesla, Inc	72.43
AMZN	Amazon.com, Inc.	101.81
SHOP	Shopify Inc.	200.46
PCG	PG&E Corporation	138.30
CCJ	Cameco Corporation	193.55
PINS	Pinterest, Inc.	71.17
Group B (the companies whose PE ratio is under 5)		
Code	Name	PE ratio
PBR	Petroleo Brasileiro	2.93
HPE	Hewlett Packard	4.50
PBR-A	Petroleo Brasileiro Ptrobras	2.63
CPG	Crescent Point Energy Corp.	3.25
LUMN	Lumen Technologies, Inc.	3.46
F	Ford Motor Company	4.04
VALE	Vale S.A.	3.26

Source: Yahoo Finance (2022, October)

According to Yahoo Finance's list of the companies that are the most active in the market, the selected companies were chosen out of the top 100 list according to the PE ratio value. The first group included the companies whose PE ratio exceeds 50 (group A). The second group comprised the companies listed under the top 100 whose PE ratio is under 5 (group B). Ratio analysis was carried out for the two groups. The indicators included were also divided into categories, including traditional, most common ratio indicators requiring only data from the Balance Sheet (BS) and the Income Statement (IS). This analysis also included the ratio indicators whose computation required data obtained from the Cash Flow Statement (CFS) apart from those obtained from the Balance Sheet and the Income Statement. The selected indicators reflect the level of the company's liquidity, solvency, and leverage level, on the one hand, and profitability, on the other. The chosen indicators are listed in Table 2.

Taking into consideration the fact that debt is known to affect liquidity, this analysis includes the ratio numbers related to it grouped under the liquidity aspects. The company's bigger liabilities are also known to negatively affect its liquidity. To make an additional comparison, in this case a comparison between the indicators, these companies are analyzed taking into consideration the indicators that provide the same type of information. The data for computing the listed ratio indicators originate from Yahoo's finance website, which contains three financial statements, namely the Balance Sheet, the Income Statement, and the Cash Flow Statement.

As the results of the ratio analysis only show partial analysis, they are used as inputs for a further analysis in this paper which aims to perform a multi-criteria ranking of the companies based on the ratio indicators. The next step in the analysis implies reduction in the number of the selected indicators using the variation coefficient and the correlation coefficient. Then, such a reduced number of indicators is used in the multi-criteria ranking of the listed companies. The multi-criteria ranking is performed using the PROMETHEE method, combined with the entropy method. The entropy method is used to compute the weighted coefficients necessary for multi-criteria ranking, these coefficients reflecting the impact of each indicator on the multi-criteria ranking.

Table 2 The list of the ratio indicators

Indicators → Aspects ↓	The indicators whose data are obtained from the BS and the IS	The indicators whose data are obtained from the CFS, the BS and the IS
The liquidity, solvency and leverage aspects	Quick ratio (Acid test) - QR	Current liabilities coverage ratio - CLCR
	Long-term assets to the long-term debt ratio - LTA/LTD	Debt coverage ratio - DCR
	Debt ratio - DR	Dividends coverage ratio - DVCR
The profitability aspects	Return on assets - ROA	Operating income quality - OIQ
	Return on equity - ROE	Cash Return on invested assets - CRIA
	Net profit margin - NPM	Cash return on invested Capital - CRIC

Source: Authors

Finally, after conducting the ranking based on the PROMETHEE method, the stability intervals are computed and analyzed. They are computed for the analyzed criteria, used for ranking, and present the level of the criteria stability.

Based on the foregoing, the set hypotheses read as follows:

H1: Individually observed, the companies belonging to Group A demonstrate better performances compared to the companies belonging to Group B from the liquidity aspect.

H2: Individually observed, the companies belonging to Group A demonstrate better performances compared to the companies belonging to Group B from the profitability aspect.

H3: There is a significant difference in the business performances between the ranked companies belonging to Group A compared to those belonging to Group B taking into consideration the net preference flow value.

RESULTS AND DISCUSSION

The results of the ratio analysis

As is mentioned, the first step of the analysis is based on the selected ratio indicators for the two groups of companies. The indicators are categorized into two sections and are derived from the financial statements that provide the essential information for the analysis. Some of the indicators provide similar data as well. Therefore, the results of the ratio analysis are explained in a way to compare the computed values.

The first group of indicators reflects the liquidity, solvency, and leverage of the selected companies. The results are presented in the table below (Table 3).

Table 3 shows the indicators related to the liquidity of the companies of the two major groups and for all the analyzed companies as well. The QR shows that almost all the observed companies have the values greater than acceptable. The PINS and SHOP companies achieve a great liquidity level, which specificity may be explained by the fact that these two companies operate without inventory. That cannot be accepted as a rule, because AMZN is also a company known as the one operating almost without inventory, but its QR is close to 1. The rest of the companies observed have the value close to 1, which indicates acceptable liquidity. PCG and CPG are the less liquid companies according to the QR ratio.

Liquidity can also be analyzed using the data listed in the CFS (Cash Flow Statement), in which case, according to the literature review, a company is liquid if its achieved ratio value is minimum 0.4 or greater. Taking that fact into consideration, and based on the computed value, SHOP and PINS are the most liquid companies. For these two companies, the values of these indicators are 4.39 and 6.11, respectively, whereas for the rest of the companies observed, the values of

Table 3 The results of the ratio analysis for liquidity, solvency, and leverage

	QR	CLCR	LTA/LTD	DR	DCR	DVCR
TSLA	1.26	1.04	3.76	0.49	0.58	8.29
AMZN	0.96	0.27	2.08	0.67	0.13	2.84
SHOP	14.97	4.39	3.19	0.17	1.13	7.57
PCG	0.68	0.01	1.54	0.75	0.00	-
CCJ	4.56	3.48	2.60	0.36	0.47	275.01
PINS	13.69	6.11	1.49	0.14	2.85	3.42
PBR	0.91	0.42	1.88	0.60	0.10	-
HPE	0.73	0.20	2.55	0.65	0.11	10.46
PBR-A	0.91	0.42	1.88	0.60	0.10	-
CPG	0.48	0.02	3.20	0.41	0.00	2.21
LUMN	1.66	0.05	1.19	0.80	0.01	2.95
F	1.03	0.22	1.36	0.81	0.10	67.34
VALE	1.21	0.79	1.84	0.61	0.22	-

Source: Authors

these indicators are acceptable (Novićević Čečević & Đorđević, 2021). Yet, there are three companies that are not liquid at all, namely the companies PCG, CPG, and LUMN, whose value of the CLCR indicator is below 0.1.

The ratio between the long-term assets and the long-term debt is the next analyzed indicator. This ratio number represents the companies' solvency. Based on the value of this ratio listed in the table above, it can be concluded that they all have more than the acceptable value of the observed indicator.

The next group of indicators concerns the level of the companies' debt. Based on the value of the DR indicator, it can be concluded that some of the analyzed companies are independent as the share of the debt in the total asset sources is low, like SHOP and PINS. There are companies whose debt is significant. Those companies have a share of the total debt in the total asset sources greater than 70% or 0.7. Those companies are PCG, LUMN, and F. The DCR is the indicator that provides more detailed information about the possibility of the company to pay the debt. It represents the company's ability to pay the debt using the cash generated by its operating activities. PINs is the only company able to service its debt using the net cash generated from the operating activities and to keep enough for investments. Taking this rule into account, its several companies (PCG, CPG, and LUM) are not liquid.

The DVCS is the other indicator used in consideration for this analysis. It shows the company's ability to service its dividends using the cash generated from the operating activities. This indicator relates to the service of debt, and therefore it is listed under this indicator's group. Some of the companies did not pay their dividends in the last year, namely PCG, PBR, PBR-A, and VALE. The rest of the analyzed companies paid for it regularly. CCJ paid the most dividends using the net cash from the operating activities.

The next group of the analyzed indicators relates to the company's profitability. The results are presented in Table 4.

As the ROA and CRIA indicators represent the return of total assets and cash returned on invested assets, they should be analyzed as a pair. It is interesting to notice the fact that some companies which finished the business year with a loss generated sufficient money from their operating activities, such as PCG and CCJ. Taking into consideration both named indicators, VALE is the most profitable company. It is also interesting to notice that some of the listed companies that have a significant value for the ROA indicator, such as SHOP and CPG, have a lower level of the CRIA indicator. It is common practice for

Table 4 The results of the ratio analysis for profitability

	ROA	ROE	NPM	OIQ	CRIA	CRIC
TSLA	8.88%	18.28%	0.10	0.57	18.50%	38.08%
AMZN	7.93%	24.13%	0.07	0.54	11.02%	33.51%
SHOP	21.85%	26.18%	0.63	0.53	3.78%	4.53%
PCG	-0.09%	-0.34%	-0.00	0.87	2.37%	9.56%
CCJ	-1.36%	-2.12%	-0.07	-0.24	6.10%	9.46%
PINS	8.95%	10.41%	0.12	0.43	21.29%	24.78%
PBR	11.40%	28.64%	0.24	0.87	21.68%	54.45%
HPE	5.94%	17.16%	0.12	0.37	10.18%	29.40%
PBR-A	11.40%	28.64%	0.24	0.87	21.68%	54.45%
CPG	25.78%	43.74%	0.84	0.77	16.31%	27.67%
LUMN	3.51%	17.17%	0.10	0.66	11.21%	54.91%
F	6.98%	36.97%	0.13	0.62	6.14%	32.54%
VALE	25.09%	65.11%	0.41	1.20	28.71%	74.49%

Source: Authors

companies to achieve greater revenues compared to cash inflows. A more specific situation is noticeable in the companies such as TSLA, LUMN, PBR, PBR-A, and PINS. The results of the analyzed indicators show these companies are more successful in generating cash than in achieving revenues.

When the next two indicators, namely ROE and CRIC, are concerned, there is a noticeably similar situation. These indicators follow the trend determined by the previous two indicators.

The NPM indicator shows that in almost all the analyzed companies there is a positive relationship between the net income and the operating revenues. CPG achieved the greatest NPM. This company achieves 0.84 cents of its net income on each dollar of its operating revenues. PCG and CCJ are the companies with a net loss and the negative values of this indicator.

OIQ is the last indicator included in this analysis. Based on the values listed in the table below, a fact can be established that almost half of the analyzed companies charge approximately half of the goods sold. The extreme values are recognizable for CCJ, which has a negative value for this indicator, which can be understood given the fact that this company has a serious problem when charging its receivables. The opposite extreme value for this indicator is the value for the company VALE, whose indicator exceeds the prescribed value, which is only possible in situations when a company charges for goods in advance. That tells a lot about the financial policies that the management of this company implement.

The selection of the indicators for the application of the PROMETHEE method (the variation and correlation coefficients)

The variation coefficient values were used to select the indicators (the ranking criteria) and they were calculated for all the indicators. The obtained values of the variation coefficient less than 0.1 imply no significant differences between the observed alternatives (companies) according to the observed criterion, so they can be excluded from further consideration. Table 5 gives the values of the variation coefficient for the observed indicators.

Based on the data shown in Table 5, the variation coefficient value is not less than 0.1 for any indicator, so no indicator is excluded in this step. The final decision on which indicators to use for multi-criteria analysis was made based on the value of correlation coefficients between data pairs in each group of indicators.

Table 5 The variation coefficients

Indicators	Coefficient of variation
QR	1.51
CLCR	1.49
LTA/LTD	0.36
DVCR	2.25
DR	0.40
DCR	1.77
ROA	0.84
CRIA	0.60
ROE	0.74
CRIC	0.60
NPM	1.14
OIQ	0.55

Source: Authors

Those indicators whose correlation coefficient values are above 0.7 for a certain pair of data will be excluded from a further analysis because they have almost the same trend. Also, the correlation coefficients whose value is 0 or approximately 0 will be ignored as these pairs of indicators do not correlate. The correlation direction is neglected in this analysis as well. Table 6 accounts for the values of the correlation coefficients for each observed pair of coefficients.

Based on the values shown in Table 6 and the foregoing explanation, it can be decided which indicators should be included in further analysis. By analyzing the first group of indicators, it can be noticed that the lowest correlations are those between the following indicators: 0.04 between LTA/LTD and DVCR, and 0.07 between DVCR and DCR. Therefore, these three indicators are chosen for further analysis.

The same selection method is applied for the choice made from the second group of indicators. The chosen indicators include CRIC and NPM with the lowest value of the correlation coefficient (0.06), and NPM and CRIA with the second lowest correlation.

The results of the PROMETHEE method

After narrowing down the number of the indicators, the weight coefficients necessary for the application of the PROMETHEE method are then calculated in the paper and computed based on the Entropy method.

Table 7 shows the parameters used to implement the multi-criteria ranking based on the PROMETHEE method using the computed weight coefficients, as well as the chosen criteria (parameters or indicators).

Based on the values presented in Table 7, it can be concluded that all the indicators have approximately the same weight value and there are minor differences between them.

Table 6 The correlation coefficients for the observed groups of indicators

	QR	CLCR	LTA/ LTD	DVCR	DR	DCR	ROA	CRIA	ROE	CRIC	NPM
QR	1	0.93	0.12	-0.00	-0.83	0.85					
CLCR		1	0.12	0.25	-0.87	0.91					
LTA/ LTD			1	0.04	-0.49	-0.00					
DVCR				1	-0.13	-0.07					
DR					1	-0.77					
DCR						1					
ROA							1	0.48	0.83	0.29	0.92
CRIA								1	0.57	0.78	0.23
ROE									1	0.64	0.66
CRIC										1	0.06
NPM											1

Source: Authors

By applying the above-mentioned parameters, the ranking of the selected companies is performed. The *Visual Promethee software is used* for the multi-criteria ranking based on the PROMETHEE method. Table 8 shows the movement of the net preference flow, and the ranking of the selected companies based on the net preference flow. The new preference flow represents the difference between the positive preference flow (Phi +) and the negative preference flow (Phi -).

Based on the results of the multi-criteria analysis (Table 8), it can be concluded that only half of the observed companies operate efficiently, which can be seen based on the positive value of the net preference flow, VALE and TSLA standing out among them. The remaining companies, whose net preference flow is positive, achieve approximately equal efficiency in business. The rest of the analyzed companies have a negative preference flow. The least effective companies are LUMN and PCG, as their net preference flows are the worst.

Figure 2 presents the advantages and disadvantages of each ranked company. The rainbow diagram is used for this as it presents the identified indicators and their effect on each company's effectiveness. Therefore, all the indicators stand out as the advantages of the two top-ranked companies, while almost all the indicators are highlighted as the disadvantages of the worst-ranked companies.

Figure 2 shows that the top-ranked companies in each group have only one indicator below the line. From left to right in the figure, the number of the advantages decreases for the ranked companies, while the number of the indicators showing disadvantages simultaneously increases. Thus, the last two companies only have two of the observed indicators

Table 7 The parameters of the multi-criteria analysis

Parameters	LTA/LTD	DCR	DVCR	NPM	CRIA	CRIC
Preferences: Min/Max	Max	Max	Max	Max	Max	Max
Weight	0.1700	0.1723	0.1723	0.1734	0.1635	0.1483
Function	Usual	Usual	Usual	Usual	Usual	Usual

Source: Authors

Table 8 The results of the PROMETHEE method

Rank	Company Code	Company Group	Phi (Net preference flow)	Phi + (Positive preference flow)	Phi + (Negative preference flow)
1	VALE	B	0.3995	0.5992	0.1997
2	TSLA	A	0.3166	0.6080	0.2914
3	PBR	B	0.1811	0.4484	0.2673
3	PBR-A	B	0.1811	0.4484	0.2673
4	CPG	B	0.1781	0.4741	0.2961
5	SHOP	A	0.0882	0.5010	0.4128
6	PINS	A	-0.0053	0.4470	0.4523
7	HPE	B	-0.0083	0.4455	0.4538
8	CCJ	A	-0.1054	0.3970	0.5024
9	AMZN	A	-0.1904	0.3545	0.5449
10	F	B	-0.1946	0.3453	0.5398
11	LUMN	B	-0.3197	0.2898	0.6096
12	PCG	A	-0.5209	0.0672	0.5881

Source: Authors

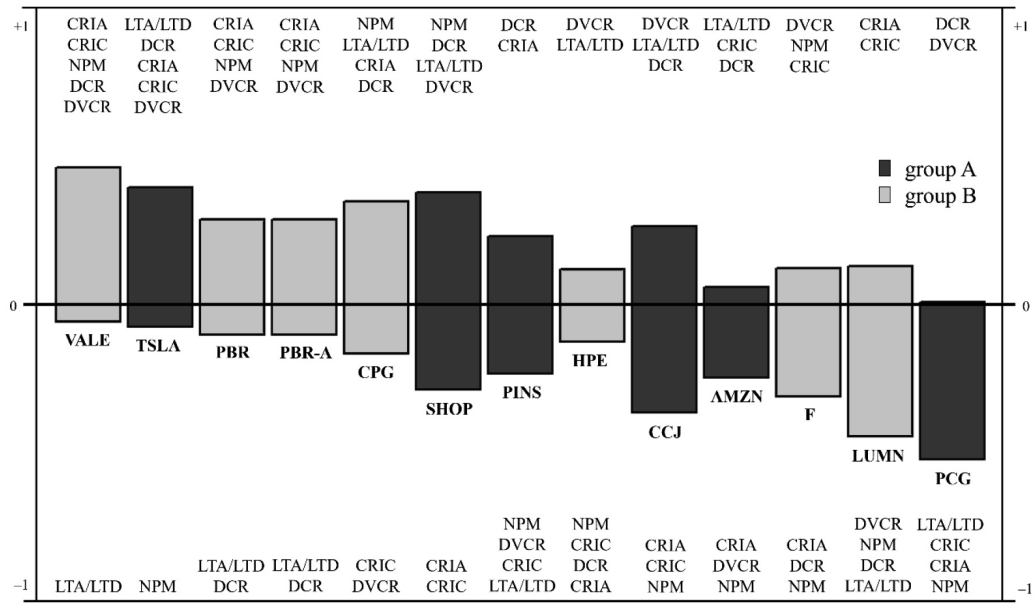

Figure 2 The advantages and disadvantages of the ranked companies

Source: Authors

as advantages. It is also interesting to notice that some companies ranked in the middle have more indicators recognized as disadvantages than those recognized as advantages.

After the ranking, the Visual PROMETHEE software computes the additional data related to the observed scenarios. In this analysis, only one scenario is observed. As the ranking of the alternatives (i.e. companies) is performed based on the selected criteria, stability analysis provides additional information about the extent to which the criteria may vary yet not affecting the ranking itself. The stability levels for the observed criteria are presented in Table 9.

It can be seen that the NPM and CRIA are the most stable criteria based on the stability intervals of the observed criteria listed in Table 9. The range of these two criteria is significant, so they can change in the interval borders without affecting the ranking. The other analyzed criteria are highly sensitive and have minimal stability intervals. The final ranking may be affected by minimal change.

Table 9 The stability levels of the observed indicators

Criteria (indicators)	Stability level
LTA/LTD	16.66% - 17.25%
DCR	16.99% - 17.74%
DVCR	16.85% - 17.57%
NPM	10.49% - 17.71%
CRIA	16.05% - 21.83%
CRIC	14.55% - 15.58%

Source: Authors

CONCLUSION

In this paper, a multi-criterion ranking of the selected companies is performed based on the indicators of the previously made ratio analysis. Based on the list of the 100 companies whose shares are traded the most, the two groups created make up the sample for the analysis. One group includes the companies whose

PE ratio is over 50 (Group A), whereas the other includes the companies whose PE ratio is less than 5 (Group B). After the sample had been selected, ratio indicators were selected as well. The ratio indicators were calculated based on the data obtained from the Balance Sheet and the Income Statement, as well as the data obtained from the Cash Flow Statement for each observed company.

The results of the ratio analysis show that, from the point of view of liquidity, the companies belonging to Group A have better individual values for the observed indicators. As a fact was established that these companies are more liquid, the first hypothesis of the paper is confirmed as such (H1).

The results of the ratio analysis related to the profitability indicators show that there are no significant differences in the values of the profitability indicators between the companies classified in Groups A and B. Bearing in mind the fact that there are no differences, the hypothesis H2 is not proven.

Neither has the third assumption put forward in this document been confirmed. The basic initial assumption implies a significant difference between the ranks of the companies after the application of the multi-criteria ranking. However, the results show no significant differences between them, which is seen through an equal number of the companies with a positive net preference flow and the same number of them with a negative net preference flow in each of the two observed groups.

Based on all the foregoing, one general conclusion can be made. From the point of view of the individual indicators and the comparative analysis carried out between them and the multi-criteria ranking, the business performance of individual companies indicates that investors should invest in the companies whose net preference flow is positive and has the greatest value. The results indicate that there should be two companies, the one from Group A - Tesla Inc. (TSLA - ranked second) and the other from Group B - Vale S.A. (VALE - ranked first). The rest of the companies with the positive value of the net preference flow could also be considered for investment (Group A: SHOP, Group B: PBR, PBR-A, CPG). In this regard, it is recommended that a more detailed analysis should be conducted when deciding which company should be invested in and all the possibilities should be explored.

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REFERENCES

Alarussi, A. S., & Alhaderi, S. M. (2018). Factors affecting profitability in Malaysia. *Journal of Economic Studies*, *45*(3), 442-458. https://doi.org/10.1108/JES-05-2017-0124

Arsić, S., Nikolić, D., & Jevtić, M. (2021). An investigation of the usability of image-based CAPTCHAs using PROMETHEE-GAIA method. *Multimedia Tools and Applications*, *80*, 9393-9409. https://doi.org/10.1007/s11042-020-10054-w

Bunea, O.-I., Corbos, R.-A., & Popescu, R.-I. (2019). Influence of some financial indicators on return on equity ratio in the Romanian energy sector - A competitive approach using a DuPont-based analysis. *Energy*, *189*, 116251. https://doi.org/10.1016/j.energy.2019.116251

Burja, C. (2011). Factors influencing the companies' profitability. *Annales Universitatis Apulensis: Series Oeconomica*, *13*(2), 215-224. https://doi.org/10.29302/oeconomica.2011.13.2.3

Delen, D., Kuzey, C., & Uyar, A. (2013). Measuring firm performance using financial ratios: A decision tree approach. *Expert Systems with Applications*, *40*(10), 3970-3983. https://doi.org/10.1016/j.eswa.2013.01.012

Domanović, V., Vujičić, M., & Ristić, L. (2018). Profitability of food industry companies in the Republic of Serbia. *Economics of Agriculture*, *65*(1). https://doi.org/10.5937/ekopolj1801011d

Đukić, T., & Novićević, B. (2013). The analysis of key financial performances of banks. *Facta universitatis-series: Economics and Organization*, *10*(2), 129-145.

Durkalić, D., Furtula, S., & Borisavljević, K. (2019). Ranking tourism market performance in EMU countries: results of PROMETHEE-GAIA approach. *Hotel and Tourism Management*, *7*(2), 67-76. https://doi.org/10.5937/menhottur1902067d

Fedajev, A., Jevtić, A., & Nikolić, R. (2020). Comparative analysis of doing business in enterprises and entrepreneurs by economic sectors in the Republic of Serbia in 2019. In Ž. Živković (Ed.), *International May Conference on Strategic Management (IMSCM20), XVI(2)* (pp. 147-160). Bor: University of Belgrade, Technical Faculty in Bor.

Husain, T., Sarwani, S., Sunardi, N., & Lisdawati, L. (2020). Firm's Value Prediction Based on Profitability Ratios and Dividend Policy. *Finance & Economics Review*, *2*(2), 13-26. https://doi.org/10.38157/finance-economics-review.v2i2.102

Husna, A., & Satria, I. (2019). Effects of return on asset, debt to asset ratio, current ratio, firm size, and dividend payout ratio on firm value. *International Journal of Economics and Financial Issues*, *9*(5), 50-54. https://doi.org/10.32479/ijefi.8595

Innocent, E. C., Mary, O. I., & Matthew, O. M. (2013). Financial ratio analysis as a determinant of profitability in Nigerian pharmaceutical industry. *International Journal of Business and Management*, *8*(8), 107-117. https://doi.org/10.5539/ijbm.v8n8p107

Jevtić, A., Radojičić, J., & Jemović, M. (2022a). Comparative analysis of business performance of trade companies, by regions in the Republic of Serbia. In Ž. Živković (Ed.), *International May Conference on Strategic Management (IMSCM22), XVIII(1)* (pp. 505-520). Bor: University of Belgrade, Technical Faculty in Bor.

Jevtić, A., Radojičić, J., & Jemović, M. (2022b). Analiza finansijske uspešnosti poslovanja srednjih trgovinskih preduzeća u Republici Srbiji - regionalni aspekt. In Ž. Gligorijević & T. Đukić (Eds.), *Regionalni razvoj i demografski tokovi zemalja Jugoistočne Evrope* (441-452). Niš: University of Niš, Faculty of Economics.

Kevser, M., & Leyli, E. B. (2019). The relationship between the ownership structure of banks and their financial performance: Empirical research for Turkey. *Economic Horizons*, *21*(2), 111-128. https://doi.org/10.5937/ekonhor1902111k

Krstić, S., Fedajev, A., & Nikolić, R. (2018). Some aspects of business operations of Serbian economy in 2017. *Industry*, *46*(4), 185-206. https://doi.org/10.5937/industrija46-19735

Marcu, C., Duta, L., & Manea, M. D. (2022). Analyzing Business Performances with a Multicriteria Decision Method. In C. Ciurea, C. Boja, P. Pocatilu, & M. Doinea (Eds.), *Education, Research and Business Technologies. Smart Innovation, Systems and Technologies, (276)* (pp. 411-419). Singapore, SG: Springer. https://doi.org/10.1007/978-981-16-8866-9_34

Mijić, K., Zekić, S., & Jakšić, D. (2017). Profitability analysis of meat industry in Serbia. *Facta Universitatis, Series: Economics and Organization*, *13*(4), 379-386. https://doi.org/10.22190/fueo1604379m

Mohamad, N. E. A. B., & Saad, N. B. M. (2010). Working capital management: The effect of market valuation and profitability in Malaysia. *International Journal of Business and Management*, *5*(11), 140-147. https://doi.org/10.5539/ijbm.v5n11p140

Mousavi, M. M., & Lin, J. (2020). The application of PROMETHEE multi-criteria decision aid in financial decision making: Case of distress prediction models evaluation. *Expert Systems with Applications*, *159*, 113438. https://doi.org/10.1016/j.eswa.2020.113438

Nguyen, T. N. L., & Nguyen, V. C. (2020). The determinants of profitability in listed enterprises: A study from Vietnamese stock exchange. *The Journal of Asian Finance, Economics and Business*, *7*(1), 47-58. https://doi.org/10.13106/jafeb.2020.vol7.no1.47

Novićević Čečević, B., & Đorđević, M. (2021). Uticaj pandemije COVID-19 na rad i finansijske performanse revizorskih društava u Republici Srbiji. *Časopis za računovodstvo, reviziju i poslovne finansije - Računovodstvo*, *1-2*, 34-51.

Saputra, F. (2022). Analysis of total debt, revenue and net profit on stock prices of foods and beverages companies on the Indonesia Stock Exchange (IDX) period 2018-2021. *Journal of Accounting and Finance Management*, *3*(1), 10-20. https://doi.org/10.38035/jafm.v3i1.64

Sondakh, R. (2019). The effect of dividend policy, liquidity, profitability and firm size on firm value in financial service sector industries listed in Indonesia stock exchange 2015-2018 period. *Accountability*, *8*(2), 91-101. https://doi.org/10.32400/ja.24760.8.2.2019.91-101

Tadić, J., Jevtić, J., & Jančev, N. (2019). Modeling of critical profitability factors: Empirical research from food industry in Serbia. *Ekonomika poljoprivrede*, *66*(2), 411-422. https://doi.org/10.5937/ekopolj1902411t

Terdpaopong, K., Rickards, R. C., & Manapreechadeelert, P. (2020). The 2011 floods' impact on the Thai industrial estates' financial stability: a ratio analysis with policy recommendations. *Environment, Development and Sustainability, 22*, 1991-2014. https://doi.org/10.1007/s10668-018-0274-0

Yahoo Finance. (2022, October). *Most Active Stocks Today. https://finance.yahoo.com/most-active?offset=0&count=100*

Yuniningsih, Y., Pertiwi, T., & Purwanto, E. (2019). Fundamental factor of financial management in determining company values. *Management Science Letters*, *9*(2), 205-216. https://doi.org/10.5267/j.msl.2018.12.002

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