FINANCIAL PERFORMANCE OF TOURISM BUSINESSES
UNDER THE INFLUENCE OF MEASURES RELATED TO COVID-19

Jozef LUKAC[ID]
University of Economics in Bratislava, Department of Economics and Management,
Faculty of Business Economy, Košice, Slovakia, e-mail: jozef.lukac@euba.sk

Peter GALLO[*][ID]
University of Prešov, Faculty of Arts, Institute of Educology and Social Work, Prešov, Slovakia, e-mail:peter.gallo.1@unipo.sk

Beáta BALOGOVA[ID]
University of Prešov, Faculty of Arts, Institute of Educology and Social Work, Prešov, Slovakia, e-mail: beata.balogova@unipo.sk

Abstract: We all know that the spread of the COVID-19 disease has brought significant restrictions for the whole world, which are also closely related to the business activities of companies. Due to the measures taken by the government of the Slovak Republic, some businesses were limited in the performance of their activities. In order to achieve the goal, in addition to general logical methods, we used hierarchical agglomerative cluster analysis. We chose the ward method as the clustering method. Ward's method of minimum variance is an agglomerative (merging) hierarchical method. Slovak businesses in the field of tourism, the most businesses contained cluster 3, which contained 16 businesses. This most numerous and dominant cluster has an average asset indicator value of 8546978 €. In Slovakia, as part of the aid to tourism enterprises at the government level, a call was launched within the framework of the scheme, during which it was possible to draw aid for the months of April to October 2020. This aid was supposed to cover the loss of 10% of their sales to entrepreneurs in the gastronomy and tourism industry.

Key words: tourism industry, gastronomy, financial performance, accommodation, COVID-19

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INTRODUCTION

Financial performance measurement can be seen as a system that represents a set of indicators used to quantify the efficiency of the enterprise and the effectiveness of its activities. It can also be understood as a reporting process that gives feedback to employees based on the results of their activities. From a strategic point of view, we identify two different aspects of the business performance measurement system. On the one hand, it reflects the procedures used in selecting appropriate performance measures within the organization's strategy. On the other hand, this system provides the information necessary to question the meaning and validity of the strategy applied in the company (Pasek and Ratkowski, 2021; Herman et al., 2022). According to (Mihalčová et al., 2021) is the difference between modern and traditional approaches to business valuation. Traditional approaches to the evaluation of financial performance are focused on the past, at most on the present, while financial evaluation criteria are applied. An analytical approach (e.g. ratio indicators, parallel and pyramidal systems), assessment of development trends is promoted. On the contrary, modern approaches are focused on the past, present, but especially on the future. Complex approaches to evaluation, use of non-economic criteria are used. Modern approaches are used to determine the development potential of the company with greater emphasis on benchmarking in the evaluation. In the period of the spread of the disease COVID-19, several companies noticed a significant difference between the expected results in financial predictions. Several authors who analyze the impact of the restriction on the financial health of companies are devoted to this area. The impact of negative economic development on the banking sector is analyzed by several researchers. Of course, the result is the finding that the spread of the disease had a negative impact on their financial performance (Devi et al., 2020; Fakhri and Darmawan, 2021; Ichsan et al., 2021; Rulyanti et al., 2021; Boriščáková and Hamadej, 2022; Ambaw et al., 2022; Zachary et al., 2022; Balogová and Vranková, 2023).

The measures also had a significant impact on small and medium-sized enterprises across the entire spectrum of the economy. Engineering companies did not have enough material, which was caused by the absence of sick employees. Food businesses also had to follow strict measures. Some fabrics had to be quarantined for more than a month. It was these individual cases that led to a decrease in the financial stability of small and medium-sized enterprises (Cepel et al., 2020; Dewan et al., 2020; Kumar and Ayedee, 2021; Dejardin et al., 2022; Çinaj et al., 2022; Kurniawati et al., 2022).

It was in the tourism, accommodation and hotel industry that we could observe significant resistance to government regulations - as a result of which sales decreased. In a paper, Hailu (2021) examined the economic activities of the food

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[*] Corresponding author

industry during the pandemic of the coronavirus disease COVID-19 in Canada with a negative impact, but also sees some positives - disruptions in the food processing sector were not as severe as in non-essential sectors. In addition, a significant increase in the minimum wage above market expectations can be a threat to businesses. The findings offer evidence that the policy of minimum current financial performance; therefore, the implementation of a balanced minimum wage policy for the benefit of all stakeholders including business owners is essential for a win-win situation (Che Ahmat, 2021).

Research suggests that the impact of seasonality of tourism facilities in Norway on financial performance depends on market segments and varies within tourism destinations regardless of COVID-19. Moreover, seasonality has a greater impact on profit margin than on asset turnover, suggesting that marketing strategies and pricing and revenue management techniques can effectively mitigate the negative impact of seasonality (Zhang et al., 2021). Several authors found that Westlife Development, Lemon Tree Hotels, Indian Tourism Development Corporation, Royal Orchid and Country Club performed significantly worse than their competitors after the pandemic. On the contrary, EIH, Advani Hotels and Resorts and TGB Banquets achieved relatively better results. Travel agencies Easy Trip and International Travel House have fared particularly poorly as a result of the pandemic, but VMV Holidays has fared relatively better in the 2021 financial year (Ghosh and Bhattacharya, 2022). In the time resulting from the pandemic, there is an obvious need to review current hotel and restaurant business practices and quickly design new and innovative strategies that guarantee the health and safety of guests as well as employees and, consequently, restore consumer confidence - of course, this has an impact on financial performance, because increased costs and operation are necessary (Sharma et al., 2021). Results of (Qiu et al., 2021) also indicate that hospitality firms that pursue improved stock market performance during a pandemic can invest in Corporate social responsibility to protect communities, customers, and employees for attracting further stakeholder. It found that several travel agencies performed significantly worse after the pandemic than in the previous (pre-crisis) year, but fared relatively better in the 2021 fiscal year. However, the hospitality sector suffered the most adverse effects of COVID-19 due to restrictions and measures imposed by local governments. Hotels have thus significantly affected their financial performance and the efficiency of hotels around the world (Kozhamzharova, 2022). According to research, the Assessment of Changes in Revenues, Costs and Cost-to-Revenue Ratios shows the extent of the impact of the pandemic. The findings indicate that most hotels have suffered a significant loss of revenue and a significant increase in their cost-to-income ratio (Temelkov, 2022). In 2020, the author Damayanti (2023) used 27 financial statements of tourism companies in the countries of Turkey and Indonesia in his research. Based on the results, it was found that the profitability ratio has significant differences in both countries, such as ROA, ROE and net margin. In the next part of the post, we will analyze the state of financial health of selected companies operating in the tourism industry in Slovakia in 2022. The limitations that we can notice in this research consist in a different way of reporting (accounting). Not every country has the same definition of stocks, costs and activation in its accounting legislation, which can distort the results of our research. Another significant limitation is the way in which the data will be obtained - while the problem may arise with information obtained from non-official statistics (In SR conditions, it is the Ministry of Finance of the SR and the register of financial statements).

MATERIALS AND METHODS

The goal of the contribution was to define selected indicators of the financial health of the company, which are significantly affected by the crisis caused by the spread of the disease COVID-19. We will also try to identify clusters for selected companies from the field of tourism with regard to selected indicators of the financial situation of companies, which reflect selected characteristics of profit, indebtedness and profitability.

For the sequence of steps, we first of all defined the companies that we will focus on in our research. We have chosen companies that excel in the tourism sector in Slovakia. Using the register of financial statements, we analyzed the financial statements. Subsequently, we calculated financial indicators that determine the state of the company's finances, their performance, and noted the deterioration/improvement of the financial situation of the selected companies.

In order to achieve the goal, in addition to general logical methods, we used hierarchical agglomerative cluster analysis. We chose the ward method as the clustering method. Ward's method of minimum variance is an agglomerative (merging) hierarchical method. In this method, the similarity of objects, or clusters, is measured as the sum of squares between objects from two clusters, added over all the attributes of the given objects. The uniqueness of the method lies in the minimization of the sum of variances across all newly created clusters. This means that in each generation we try to create clusters in such a way as to preserve as much cohesion as possible within individual clusters. To determine the optimal number of clusters, we used a heuristic approach supplemented with a graphical assessment using Screeplot. The data were obtained from the registeruz.sk database for the year 2021. For the analysis, we chose the TOP 27 companies from the field of travel and tourism according to the highest achieved sales in 2021. We can consider the absence of the most up-to-date data for 2022 as a significant limitation in our research, since under the terms of Slovak legislation, the deadline for submitting tax returns and financial statements is by the end of March 2023. Different groups of object similarity measures can measure similarity between country results. The choice of the degree of similarity also depends on the monitored characters whose values characterize the survey results for the given countries. The most well-known are distance measures, association coefficient, correlation coefficient and likelihood similarities. In our work, we will use the distance measure called the Euclidean distance. By using this distance, the author (Patel and Upadhyay, 2020) also deals with the research.

In the clustering method, we will use Ward's method, which is the most used in practice. This method does not calculate the distance between the clusters, but the clusters are formulated based on the maximization of inside aggregate sum of squares. The homogeneity measure represents the subsonic sum of squares of deviations from the aggregate diameter we call ESS - error sums of squares, and we use the following formula for its calculation (Behrens et al., 2019).

$$d_{ij} = \sqrt{\sum_{k=1}^{n}\left(X_{ik} - X_{jk}\right)^2}$$ where: is the value of the k-th variable for the i-th country, is the value of the k-th variable for the jth country.

$$ESS = \sum_{i=1}^{n_h}\sum_{h=1}^{q}\left(X_{hi} - \overline{X}_{C_h}\right)^2$$ where: is the number of objects in the cluster, is the vector of the values of the character values in the cluster, is the value vector of the i-th object's character in the cluster.

RESULTS AND DISCUSSION

The statistical analysis was performed using the programming language R, which is suitable for the creation of statistical models and data analysis and is suitable for graphing and graphic analysis of data. The data were obtained by calculating selected indicators from the area of indebtedness, profitability and basic indicators of the financial stability of enterprises. The selected data reflect the year 2021, which was significantly affected by the spread of the COVID-19 disease.

The using variables are shown in Table 1. Based on the performed analysis, we tested the basic characteristics of the research sample, while we can state that the selected variables come from a normal distribution based on the Shapiro-Wilk test. Table 2 presents descriptive statistics. A condition for the cluster analysis is to explore dependencies between variables. The starting point for us was a correlation matrix that contains Pearson correlation coefficients.

From the results of the correlation matrix, we can determine the dependence between individual variables. It is worth noting that this dependence is higher for some variables and lower for others. This means that there may be a problem with clustering in cluster analysis. Therefore, it is necessary to use principal component analysis. In doing so, we used a type of principal component analysis that works with standardized variables. For the purposes of identifying the number of significant components, we calculated the shares of the variability of the components on the total variability of the data from which we calculated the given components. Figure 1 and 2 shows given components.

Table 1. Using variables

Company	Assets	Equity	Profit	Sales	ROE	Profit margin	Total indebtedness	EBITDA	Net debt	Net debt/ EBITDA
McDonald's Slovakia spol. s r.o.	60168417	52807663	8209299	50149643	15.54	16.36961	12.23	10128705	-1.5E+07	-1.49933
Tatry mountain resorts, a.s.	4.99E+08	88735000	-1.7E+07	48191000	-19.05	-35.0792	82.20	-4429000	3.24E+08	-73.0675
SATUR TRAVEL a.s.	11654808	669416	-99593	31078203	-14.87	-0.32046	94.25	11406	-4257385	-373.258
Compass Group Slovakia s. r. o.	11188380	4032562	241621	24161059	5.99	1.000043	63.95	928580	-4232398	-4.55793
HYDROTOUR, cestovná kancelária, a.s.	13241868	-265840	94344	20219239	-35.48	0.466605	102.00	229221	265558	1.158524
Medusa Services s. r. o.	8821332	1164332	94519	16534579	8.11	0.571644	86.80	916668	3224172	3.517273
ŠK Slovan Bratislava futbal a.s.	20960688	3203293	-1271697	15174887	-39.69	-8.38027	84.71	-1892204	-1122046	0.592984
RESTON s.r.o.	4880496	933498	235974	14820293	25.27	1.592236	80.87	839987	1452308	1.728965
Medusa Restaurants, s.r.o.	13268360	2170303	89362	11807958	4.11	0.756795	83.64	957617	6530539	6.819573
TUCAN, s.r.o.	1950878	1079005	222418	11219038	20.61	1.982505	44.69	372630	-404178	-1.08466
X-BIONIC® SPHERE a.s.	2.2E+08	49732583	-1.2E+07	10750476	-23.47	-108.579	77.39	160289	1.38E+08	862.5345
TAMÁS, s.r.o.	3250708	676010	78243	10045954	11.57	0.778851	79.20	471342	597253	1.267133
Koala Tours, a.s.	1739148	1507988	230359	9853955	15.27	2.337731	13.25	300062	-437714	-1.45875
FIRSTIN, s.r.o.	3865918	1214521	82431	9512853	6.78	0.866522	68.58	487515	846429	1.736211
TIP travel a.s.	2033504	1485371	575047	9467653	38.71	6.073807	26.95	901160	-260498	-0.28907
DER Touristik SK a.s.	4342709	1016857	255150	8887004	25.09	2.871046	76.58	199112	-995445	-4.99942
EUROCOM Investment, s.r.o.	41102770	23273985	193943	8682140	0.83	2.233816	43.37	1998369	9023421	4.515393
TOP-RELAX s.r.o.	2738152	354954	1139	7658609	0.320	0.014872	87.03	167411	768597	4.591078
DORA Gastro Slovakia, a. s.	3461181	2272317	146191	6760353	6.43	2.162476	34.34	1394817	-258771	-0.18552
MINISTRY rental service, s.r.o.	5020435	2392227	2310874	6615685	96.59	34.93023	52.35	3579638	-1386050	-0.3872
BUBO travel agency, s.r.o.	12470268	893230	-459897	6124663	-51.48	-7.50894	92. 83	-688281	-1360281	1.976345
2beGROUP s.r.o.	3233236	1577113	1482199	5874774	93.98	25.22989	51.22	2066593	-2650418	-1.28251
BHP Tatry, s. r. o.	24519199	2600214	161899	5848376	6.22	2.768273	89.39	849664	3002471	3.533716
Grand hotel Permon, s.r.o.	3145521	925235	137974	5668629	14.91	2.433992	70.58	180391	-699073	-3.87532
Ferozmat trade s.r.o.	3710783	33555	10735	5643028	31.99	0.190235	99.09	14700	-1319658	-89.7727
APROXIMA, s.r.o.	3789575	1831824	-23691	5492615	-1.29	-0.43132	51,6.	135935	1180129	8.681568
SOREA, spol. s r.o.	2091269	-763120	-2292567	5315366	-58	-43.1309	136.9	-2112240	-1087688	0.514945

Table 2. Descriptive statistics

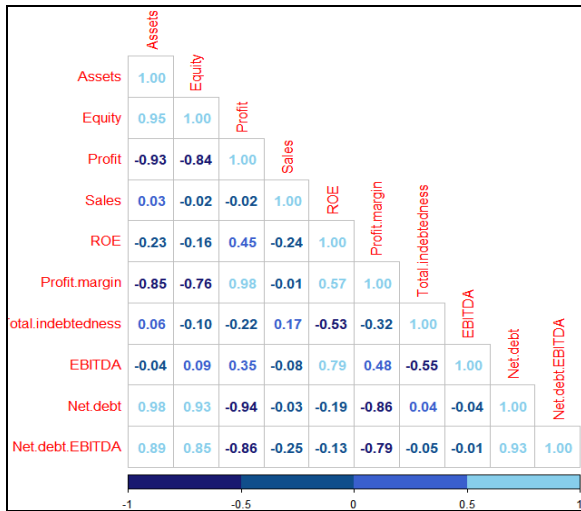|	Assets	Equity	Profit	Sales	ROE	Profit margin	Total indebtedness	EBITDA	Net debt	Net debt/ EBITDA
Valid	27	27	27	27	27	27	27	27	27	27
P-value of Shapiro-Wilk	< .001	< .001	< .001	< .001	0.026	< .001	0.320	< .001	< .001	< .001
Minimum	1.739e+6	-763120.000	-1.691e+7	5.315e+6	-58.000	-108.580	12.230	-4.429e+6	-1.519e+7	-373.260
Maximum	4.986e+8	8.874e+7	8.209e+6	5.015e+7	96.600	34.930	136.490	1.013e+7	3.236e+8	862.530

Figure 1. Reciprocal correlation of variables
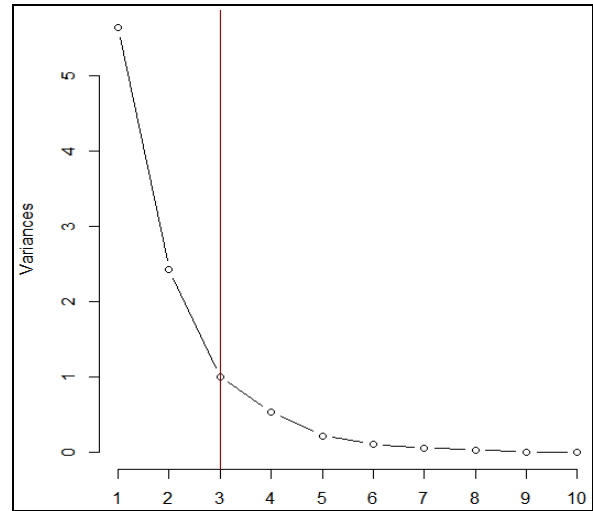
Figure 2. Screeplot of main components (PC)

Table 3. Selected statistics for variables

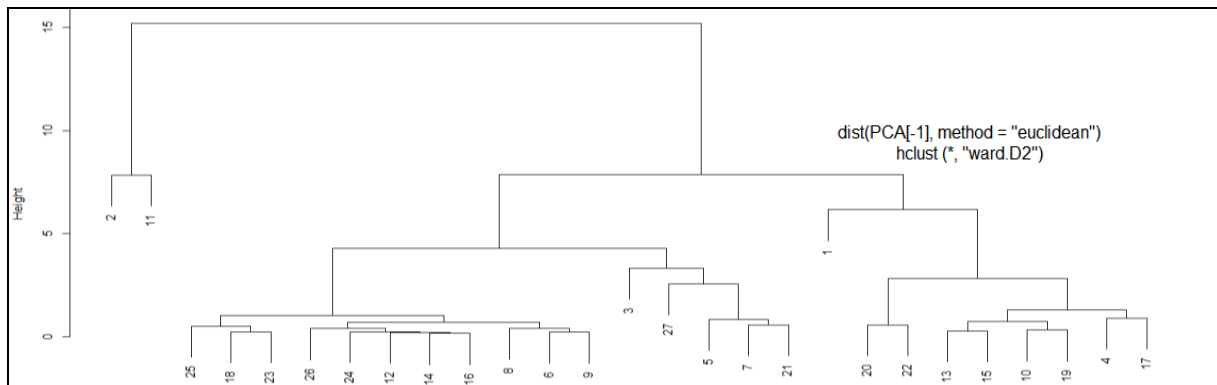| Indicator	PC1	PC2	PC3	PC4	PC5	...	PC10
Standard derivation	2.374972	1.557802	1.001927	0.7285654	0.4635434	...	0,0375805
The proportion of variance	0.564050	0.242670	0.100390	0.0530800	0.0214900	...	0.00014000
Cummulative of variance	**0.564050**	**0.806720**	**0.907110**	**0.9601900**	**0.9816800**	**...**	**1**

Figure 3. Dendrogram of selected enterprises

Table 3 shows that the first component explains the most and the last the least variability. 3 components were enough to explain 90.07% of the variability of the original set. We can conclude that we have met the rule that states that the number of principal components explains at least 70% of the total variance of the data (Said et al., 2020). Subsequently, we also displayed the explanation of the variability of the original set of components graphically using Screeplot, where the dispersion of the individual main components is explained and where we found a break in the graph. On this graph, we can observe the break at the second component, which explains 90.07% of the variability of the total variance of the data. Based on the 3 components we selected for use in cluster analysis, a hierarchical tree, also called a dendrogram, was developed. Figure 3 shows the Dendogram of selected enterprises. The following table 4 shows the number of enterprises in individual clusters.

Table 4. Enterprises in individual clusters

Cluster	Enterprises
1	McDonald's Slovakia spol. s r.o. MINISTRY rental service, s.r.o.; 2beGROUP s.r.o.; Cmpass Group Slovakia s. r. o.; TUCAN, s.r.o.; Koala Tours, a.s.; TIP travel a.s.; DER Touristik SK a.s.; DORA Gastro Slovakia, a. s.;
2	Tatry mountain resorts, a.s.
3	SATUR TRAVEL a.s.; HYDROTOUR, cestovná kancelária, a.s.; Medusa Services s. r. o.; ŠK Slovan Bratislava futbal a.s.; RESTON s.r.o.; Medusa Restaurants, s.r.o.; TAMÁS, s.r.o.; FIRSTIN, s.r.o.; DER Touristik SK a.s.; TOP-RELAX s.r.o.; BUBO travel agency, s.r.o.; BHP Tatry, s. r. o.; Grand hotel Permon, s.r.o.; Ferozmat trade s.r.o.; APROXIMA, s.r.o.; SOREA, spol. s r.o.
4	X-BIONIC® SPHERE a.s.

The next procedure was to select the number of enterprises in our analysis. Based on a heuristic approach, we classified the set of enterprises into four clusters. However, we also used Screenplot, where the number of clusters is displayed on the x-axis and the sum of squares within the cluster on the y-axis. The decisive criterion is the minimization of the within-cluster sum of squares, which represents the optimal state. The line dividing the axis defining the 4 clusters represents the optimal state when the within-cluster sum of squares has an optimal value. Figure 4 shows screeplot of the number of clusters. If we had opted for more clusters, the within-cluster sum of squares would have made the number of countries in the cluster too small.

Conversely, a small number of clusters would cause the within-cluster sum of squares to show too high values. Subsequently, we also plotted the clusters in a hierarchical tree, where individual clusters are marked. Each business is marked with a name. Four clusters were created, which are heterogeneous from each other, but the companies within their cluster are homogeneous. It means that enterprises in one cluster have similar characteristics in the area of indicators of the financial situation of enterprises and at the same time have different characteristics of indicators with enterprises in other clusters. From this dendrogram shown in Figure 5, we can conclude that the set of our 26 enterprises was divided into four clusters by means of cluster analysis. The largest cluster is represented by 16 enterprises, the smallest by 1 enterprise.
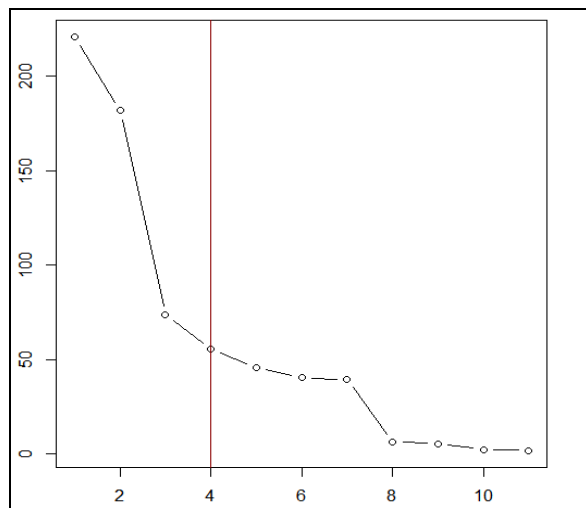

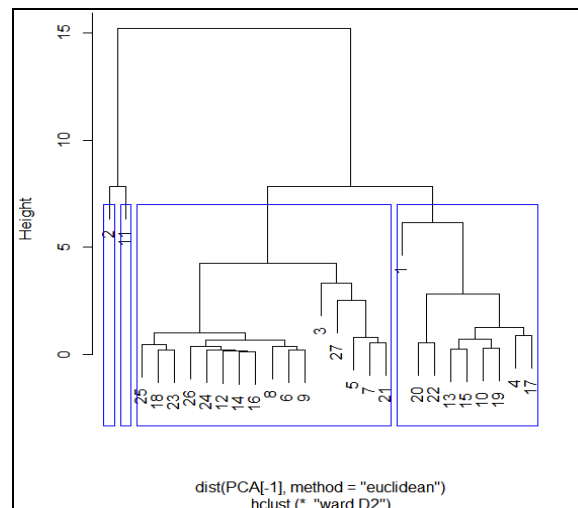Figure 4. Screeplot of the number of clusters

Figure 5. Dendrogram of selected enterprises in cluster

CONCLUSION

On the basis of hierarchical agglomerative cluster analysis, identify clusters for selected companies with regard to selected financial indicators. In this analysis, we calculated 10 financial indicators for selected Slovak companies. We used the measure of distance using the Euclidean distance. We chose the ward method as the clustered method. Using the method of main components, we created clusters of enterprises, which are drawn in a dedrogram, which classified the enterprises for us based on selected financial indicators. Enterprises were thus organized into clusters that have similar characteristics and differ from the characteristics of enterprises in other clusters. Before moving on to clustering, we examined the relationships between individual variables. In our case, the characteristics of companies represent the characteristics of selected financial indicators. To determine the optimal number of clusters, we used a heuristic approach supplemented with a graphical assessment using Screeplot, where the numbers of clusters and intra-cluster sum of squares were shown. The result is the identification of 4 clusters. Based on the dendrogram, we found that during the COVID period, out of 27 Slovak businesses in the field of tourism, the most businesses contained cluster 3, which contained 16 businesses. This most numerous and dominant cluster has an average asset indicator value of €8546978. The average value of the achieved profit in this cluster is -181604.7 €, which are not favorable numbers for tourism businesses. The ROE indicator is more suboptimal with a value of -4.15%, which is caused by a drop in sales due to the restrictive measures imposed on this business sector. Another indicator is total indebtedness, where companies again reach high values at an average level of 86.48%, while it is necessary to point out that in the long term such a situation is intolerable. The development of financial indicators during the next period, when restrictive measures were again adopted, will be analyzed in the following posts.

In Slovakia, as part of the aid to tourism enterprises at the government level, a call was launched within the framework of the scheme, during which it was possible to draw aid for the months of April to October 2020. This aid was supposed to cover the loss of 10% of their sales to entrepreneurs in the gastronomy and tourism industry. In the coming months, the plan is to approve a large scheme that exceeds the threshold of 200 000 €. The characteristics of the new aid are as follows: the aid provided is for the months of November 2020 to March 2021, while the subsidy amounts to 10% of net turnover. Those entities that had no turnover in 2019 can also apply for help, and the limit per applicant is currently €200,000.

Not only restaurants, but also accommodation establishments, travel agencies, tour guides, organizations of congresses and corporate exhibitions, swimming pools, water parks, botanical and zoological gardens, cable car and lift operations, amusement parks and museums can apply for the subsidy. We firmly believe that the situation in the gastro sector, accommodation services and the entire travel industry will improve in the future and the spread of the disease will be eliminated. This is precisely the prerequisite for positive development and thus achieving financial results from the pre-crisis period. The selection of a indicators is considered to be the main limitation of the paper.

In general, mentioned financial indicators are the most listed in tourism sector. The future research direction will be focused on more indicators, especially non financial indicators in tourism sector. Exploring the financial and non-financial indicators can show us complete situation of tourism industry in hotels, accommodation and gastronomy.

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