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The impact of financial performance on the profitability of advertising agencies in the Slovak Republic

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Abstract
Background: To improve operational and financial policies regarding the allocation of existing and obtaining new resources, strategic decision-making, managers use indicators of financial performance. **Purpose:** The aim of this study is to analyze the impact of financial performance on the profitability of advertising agencies in Slovakia. **Study design/methodology/approach:** A sample of 88 Slovak advertising agencies was analyzed by means of regression modeling the data based on financial statements of the financial year 2020. The hypothesis that the indicators of financial performance of advertising agencies in Slovakia have an impact on their profitability is partly confirmed by the results of this research. The first proposed model was adjusted by excluding the independent variable Current Ratio, which allowed us to build the second model to explain 95.21% of the Return on Assets deviation due to the variation of the selected independent variables. **Findings/conclusions:** By selecting Return on Assets as a dependent variable that characterizes the financial performance of advertising agencies, research has shown that Total Assets Turnover and Firm Size have significant positive influence on it, but Debt to Equity Ratio has a negative influence. This empirically testifies the expediency of financing the activities of advertising agencies from debt resources, scaling the scope of their activities and increasing sales using innovative approaches for getting more customers. **Limitations/future research:** The study limitations relate to completeness of information and availability of open access to the necessary data in the published financial statements of Slovak advertising agencies. The results of this research could be applicable and beneficial for providers of capital for advertising agencies. It could be also used as a tool to determine key factors of profitability and to adjust companies' financial and operational policies.

Keywords
profitability, financial performance, advertising agencies, regression analysis, return on assets

Introduction

Modern research in the field of accounting and finance shows that elements of the financial statements and financial ratios have different effects on the company's value and indicate the quality of financial performance. Scholars continue to discuss which factors have a decisive influence on financial performance, and how they affect the financial performance of enterprises in a particular industry. The focus of this study is concentrated on the activity of advertising agencies in Slovak Republic. The main strategic aim of advertising agencies is to increase their profitability, thus financial performance for them is crucial as it indicates the effectiveness of their policy. This implies the need to find effective solutions for management of advertising agencies, to improve their profitability, based on identifying the characteristics of key factors that determine its achievement.

In recent years, the Slovak Republic has been experiencing a steady increase in advertising costs - in 2012 this figure was 258 million EUR, compared to - 368 million EUR in 2019 (Guttmann, 2021). However, according to Mediaguru media agency, net advertising costs in 2020 remained at 352.1 million EUR and decreased by almost 21 million EUR compared to 2019 (Krasko, 2021). According to representatives of Interactive Advertising Bureau Slovakia it a growth in the Slovak advertising market was forecast for 2021, in particular the rise in advertising costs in the country by 28% (Interactive Advertising Bureau Slovakia, 2021), primarily media and video advertising. But even such a rapid growth did not enable Slovakia to reach the level of market development in 2019. The current situation evidences the gradual recovery and development of advertising agencies activities in Slovakia. Basically, this is due to the spread of such trends in this area as Green Marketing, Influencer Marketing, Digital Marketing and SMM. This necessitates for scientists to pay attention to issues of profitability management of advertising agencies. In particular, to determine the characteristics of the impact of profitability factors will help managers of these enterprises to adjust current managerial policies and financial decisions, and also to make strategical changes that will improve their margins, increase the profits, and ensure sustainable development. It will allow advertising agencies to identify areas for creative and innovative solutions in their activities, areas for improving business processes, help to eliminate inefficient operations, reduce bloated processes, streamline workflows, and optimize marketing services they provide.

This research focuses on financial performance issues with relation to the profitability indicators of advertising agencies. Many studies are dedicated to the influence of financial performance on the profitability, but only a few studies have been conducted in the Slovak Republic which did not relate to the analysis of advertising industry.

The main hypothesis of this study is that the financial performance indicators of advertising agencies in Slovakia (Company Size, Current Ratio, Debt to Equity Ratio, Total Assets Turnover) have an impact on their profitability (Return on Assets). The paper contributes to the existing research by presenting empirical evidence on the relationship between financial performance indicators of advertising agencies and its profitability, based on the study of Slovak companies.

The paper is organized in the following way. The introductory part reveals the relevance of the study. The second section brings literature review. The process of data collection and methodology is introduced in the third section. The results are presented in the following section. Finally, the last section provides conclusions of the research and recommendations for improving advertising agency's profitability.

1. Literature review

Since profitability is one of the key indicators of the company, the investigation of the impact of various types of internal and external factors on it was conducted in many papers by scientists who analyze the features of its impact in different economic sectors.

The article identifies several groups of scientists who have conducted research in this area. Representatives of the first group study the impact of available resources or groups of resources (elements of enterprise assets, certain activities of the enterprise), which affect profitability of a company. Due to the gradual formation of the knowledge-based economy, in recent years, studies of the impact of intangible factors of enterprise value creation have become especially relevant. Some scholars dedicate their papers to issues of the impact of intellectual capital on the entities' profitability (Sik & Kim, 2020; Kaymaz, Yilmaz & Kaymaz, 2019; Suherman, 2017; Seo & Kim, 2020; Petković & Dordević, 2021; Lehenchuk, Tumpach, Vyhivska, Makarovych & Laichuk,

2022; Serpeninova, Lehenchuk, Mateášová, Ostapchuk & Polishchuk, 2022). Other researchers analyze the effect of certain activities on the profitability of enterprises. For instance, Riaz, Furqan and Siddique (2015) studied the impact of advertisement expenses on the banks' profitability. Ullah (2019) examined the influence of advertising on profitability of listed companies in Pakistan.

Representatives of the second group study the level of significance of the impact or features of the relationship (positive, negative, neutral) between the capital structure of the enterprise (ratio of own and borrowed resources) and its profitability. The aim of the research is to determine optimal capital structure to ensure maximum profitability. Today, this is one of key questions that financial managers face, and which scientists can answer. The subject of such research is mainly those types of enterprises that attract additional share capital, and which provide recommendations for improvement the adaptability of capital components. The influence of the capital structure on the profitability was investigated in the papers of Abor (2005), Salawu and Awolowo (2009), Addae, Nyarko-Baas and Hughes (2013), Singh and Bagga (2019), Chandra et al. (2019), Fekadu (2020), Derbali (2021), Chandra, Junaedi, Wijaya and Ng (2022), Georgakopoulos, Toudas, Poutos, Kounadeas and Tsavalias (2022), Irawan, Pulungan, Subiyanto and Awaludin (2022), Pham, Hoang and Pham (2022), Habibniya, Dsouza, Rabbani, Nawaz and Demiraj, (2022).

Representatives of the third group of scholars study the direct effect of financial performance on the entities' profitability in various sectors of the economy (banking industry organizations, coal mining companies, food and beverage companies, bidder companies, service firms, textile industry companies etc.) in different countries. The main scientific controversies among scientists in such studies concentrated on which indicators will be used for analysis of profitability of the enterprise. Namely, which variables will be dependent or independent, and which indicators will be used to characterize the financial performance of the enterprise. Depending on the chosen set of variables, the analysis of the impact of the latter on the former is carried out. Correlation between financial performance indicators and profitability of enterprises is the focus of research by Pandian and Narendran (2015), Al Shahrani and Zhengge (2016), Linawati and Halim (2017), Fauziyah and Djamaluddin (2021), Gopu, Imran and Hanaa (2021), and Herdiyana, Sumarno and Endri (2021).

As a result of the literature review, no studies devoted to the analysis of financial performance impact on the advertising or marketing agencies profitability in Slovak Republic were found. Thus, this research brings sound contribution to the formation of recommendations for improving advertising agencies' profitability.

2. Methodology

To determine the impact of the indicators of financial performance of advertising agencies on their profitability, a sample of 88 Slovak advertising companies was selected (Appendix 1). The necessary data for calculating financial performance indicators of advertising companies was taken from annual financial reporting of such companies for the 2020 year. All 88 observed Slovak advertising agencies are limited liability companies, most of which (83%) are private domestic entities.

Multilinear regression was used to analyse such variables as ROA (Return on Assets); CR (Current Ratio), DEqR (Debt to Equity Ratio), TAT (Total Assets Turnover), and 1 CS (Company Size). The higher the company's ROA means the higher the level of achieved profitability. Choosing ROA as a dependent variable in comparison with other indicators which characterise profitability of the enterprise is proved by its broad application by scholars Linawati and Halim (2017), Singh and Bagga (2019), Ullah (2019), Kaymaz et al. (2019), Herdiyana et al. (2021), Fauziyah and Djamaluddin (2021). On the other hand, ROA is used by the management of advertising agencies to adjust current managerial policies and making decisions, because ROA reflects the effectiveness of management in the context of using the company's assets at their disposal. In addition, in comparison with other indicators of profitability (ROE, ROIC, ROCE), ROA shows how efficiently the company operates both its own and borrowed resources. This justifies its application while making financial decisions by the company's management and external capital providers (investors, borrowers).

The suggested model is checked for adequacy (by means of F critical value) and the lack of multicollinearity (by means of correlation matrix).

To examine the relationships between the ROA (dependent variable) and indicators that characterize financial performance of advertising agencies (independent variables), such indicators must be calculated based on financial statements (Table 1).

Table 1 Variables' characteristics

Variable		Meaning	Calculation	Data type from financial statements
Dependent Variable				
ROA	Return on Assets	Indicates relation between profitability and total assets	$ROA = \frac{Net\ Profit}{Total\ Assets}$	Net turnover (V1), Total assets (S1)
Independent Variables				
CR	Current Ratio	Indicates ability to pay current obligations	$CR = \frac{Current\ Assets}{Current\ liabilities}$	Current assets item (S33), Current liabilities item (S122)
DEqR	Debt to Equity ratio	Indicates the proportions of company's equity and liabilities of a company is using to finance its assets	$DEqR = \frac{Total\ Liabilities}{Total\ Equity}$	Current liabilities item (S122), Long-term liabilities item (S101), Total assets item (S1)
TAT	Total Assets Turnover	Indicates the efficiency of company's ability to use its assets to generate income	$TAT = \frac{Total\ Sales}{Total\ Assets}$	Revenues from sales of goods (V3), Revenues from sales of own products (V4), Revenues from sales of services (V5), Total assets item (S1)
l_CS	Company Size	Indicates a size of a company	$l\_CS = Ln(Total\ Assets)$	Total assets item (S1)

Source: the authors

2. Analysis and results

2.1. Model 1

This research hypothesizes that the suggested indicators of financial performance of advertising agencies have an impact on their profitability indicator – ROA.

This study tests the connection between such indicators and the advertising firms' ROA using regression model (Table 2).

Table 2 Initial data for regression model 1

REGRESSION MODEL	
Dependent variable	**Independent variables**
ROA – Return on Assets	**CR** – Current Ratio
	DEqR – Debt to Equity Ratio
	TAT – Total Assets Turnover
	l_CS – Company Size

Source: the authors

Tables 3.1-3.2 show the results by means of OLS method. It presents the level to which the independent variable influences the dependent variable.

Table 3.1 Model 1. OLS, using the observations 1-88

	Coefficient	Standard error	T-statistics	P-value	Significance by t-statistics
const	−1.07432	0.394659	−2.722	0.0079	***
CR	0.00323216	0.00285369	1.133	0.2606	
DEqR	−0.00445232	0.00249838	−1.782	0.0784	*
TAT	0.958469	0.0239596	40.00	<0.0001	***
l_CS	0.0740984	0.0312633	2.370	0.0201	**

Source: calculated via Gretl software package

Table 3.2 Model 1. OLS, using the observations 1-88

Indicator	Value	Indicator	Value
Mean dependent var.	1.805105	S.D. dependent var.	2.479148
Sum squared resid.	25.19858	S.E. of regression	0.550997
R-squared	0.952875	Adjusted R-squared	0.950604
F(4, 83)	419.5679	P-value (F)	3.53e-54
Log-likelihood	−69.84243	Akaike criterion	149.6849
Schwarz criterion	162.0715	Hannan-Quinn	154.6751

Source: calculated via Gretl software package

The following equation demonstrates Model 1:

$$\hat{y} = -1.07432 + 0.00323216x_1 - 0.00445232x_2 + 0.958469x_3 + 0.0740984x_4 \quad (1.1)$$

where: $\hat{y}$ – ROA;
x_1 – CR;
x_2 – DEqR;
x_3 – TAT;
x_4 – l_CS.

The absence of asterisks symbols in the corresponding column of the table 3.1 indicates the insignificance of the independent variable CR. This is confirmed by the level of significance of the parameter (P-value), which allows to test hypotheses about the significance of each indicator and select significant ones and insignificant model variables. For example, CR has P-value 0.26, that is, 26% to make a mistake is a clear exaggeration of the chosen level of significance. Table 3 shows that the most important parameters are constant (P-value =0.0079) and TAT (P-value =<0.0001).

The content of the indicators of the regression equation of Model 1 (1.1) is as follows:
1. If CR increases by 1, then ROA increases by 0.00323216;
2. If DEqR increases by 1, then ROA decreases by 0.00445232;
3. If TAT increases by 1, then ROA increases by 0.958469;
4. If Company Size (l_CS) increases by 1, then ROA increases by 0.0740984.

Model 1 shows that among the suggested parameters (excluding the constant), all parameters have a direct impact on the resulting, except DEqR. Thus, increasing this independent variable DEqR will reduce the dependent variable (ROA).

Table 3.2 indicates that the coefficient of determination of the suggested model equals 0.9529, which means that approximately 95.29% of ROA variation can be described by selected independent variables and more specifically by applying the corresponding equation (1.1).

The closer the value of the coefficient of determination to 1, the better the model is recognized. But the problem of estimating multiple linear regressions (those with more than one independent variable) may consider such independent variables that have nothing to do with the dependent variable. Therefore, the adjusted coefficient of determination (Adjusted R^2) must be used, which allows comparing models with different numbers of factors so that their number does not affect the statistics. As it might be seen from Table 3, the difference between the unadjusted and the adjusted coefficient of determination is not significant (95.29% -95.06% = 0.23%). The adjusted coefficient of determination, which is usually less than the unadjusted value, is considered to be a more accurate characteristic of the predictive power of the regression model.

The next step is to test the model for multicollinearity. To allow further use of the proposed model, it is necessary to reject the assumption that there are close linear relationships between the selected independent variables. That is, the existence of multicollinearity between factors must be rejected. Multicollinearity is present when such a relationship becomes 0.7 or more. If there are close links between the parameters, they must be removed from the model. Fig. 1 presents a correlation matrix of Model 1, which proves that the multicollinearity between the selected independent variables is absent.

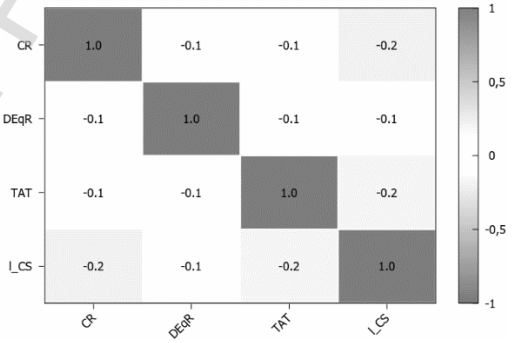

Figure 1 Correlation matrix of Model 1
Source: calculated via Gretl software package

A necessary step in testing Model 1 is to test it with an F-test (Fisher's test) with a probability of 0.95. The actual (Ffact) and critical (Fcrit) values of F must be compared. Table 3 indicates the observed value - F (4, 83) = 419.5679. Table 4 shows the F critical value.

Table 4 The F critical value for Model 1

F(4, 83)	
Right-tail probability	0,05
Complementary probability	0,95
Critical value	**2,48166**

Source: calculated via Gretl software package

The main condition of F-test is satisfied, because Ffact (419.5679) > Fcrit (2.48166). According to the results of this test, Model 1 is

considered adequate for sample data at the level of reliability (confidence interval) of 95% or with a probability of error of 5%. Since Ffact is higher than Fcrit, the null hypothesis about the random nature of factors is rejected and their statistical significance in the context of the influence on the dependent variable (ROA) is recognized.

Model 1 is consistent in the context of high values of both unadjusted and adjusted coefficient of determination (95%), and has a lack of multicollinearity between selected independent variables, adequacy of sample data according to the tested Fisher's test. To improve Model 1 it is necessary to review the selected independent variables in the context of their statistical significance, as the parameters include those that are considered insignificant. Thus, such parameter as CR (table. 3) has P-value 26%, which is an exaggeration of a given level of significance, and therefore a high level of acquisition of erroneous value. It means this independent variable does not influence significantly on the selected dependent variable, thus should be excluded from the model. Therefore, there is a need to adjust Model 1 and construct Model 2.

2.2. Model 2

The initial data for Model 2 are the same as for Model 1, except for one independent variable, the results of which identified statistical insignificance relative to the result. Results are presented in the tables 5.1-5.2.

Table 5.1 Model 2. OLS, using the observations 1-88

	Coefficient	Standard error	T-statistics	P-value	Significance by t-statistics
const	−0.940602	0.377220	−2.494	0.0146	**
DEqR	−0.00474829	0.00248886	−1.908	0.0598	*
TAT	0.955136	0.0238182	40.10	<0.0001	***
l_CS	0.0655303	0.0303853	2.157	0.0339	**

Source: calculated via Gretl software package

Table 5.2 Model 2. OLS, using the observations 1-88

Indicator	Value	Indicator	Value
Mean dependent var.	1.805105	S.D. dependent var.	2.479148
Sum squared resid.	25.58805	S.E. of regression	0.551924
R-squared	0.952147	Adjusted R-squared	0.950438
F(3, 84)	557.1204	P-value (F)	2.59e-55
Log-likelihood	−70.51728	Akaike criterion	149.0346
Schwarz criterion	158.9439	Hannan-Quinn	153.0268

Source: calculated via Gretl software package

The following equation demonstrates Model 2:

$$\hat{y} = -0.940602 - 0.00474829x_1 + 0.955136x_2 + 0.0655303x_3 \quad (1.2)$$

where $\hat{y}$ – ROA;
x_1 – DEqR;
x_2 – TAT;
x_3 – l_CS.

Model 2 is characterised by the statistically significant independent variables (Table. 5). TAT is the most significant parameter (P-value =<0.0001), which indicates that it has the strongest influence on ROA (dependent variable).

The content of indicators of the regression equation of Model 2 (1.2) is as follows:

1. If DEqR increases by 1, then ROA decreases by 0.00474829;
2. If TAT increases by 1, then ROA increases by 0.955136;
3. If Company Size (l_CS) increases by 1, then ROA increases by 0.0655303.

Equation of Model 2 shows that among the proposed parameters (excluding the constant), all parameters have a direct influence on the resulting, except DEqR.

Table 5 indicates that the coefficient of determination of Model 2 is 0.9521. The difference between the unadjusted and the adjusted coefficient of determination is insignificant

(95.21%-95.04%=0.17%). The adjusted coefficient of determination, which is usually less than the unadjusted value, is considered to be a more accurate characteristic of the regression model.

Figure 2 shows that multicollinearity between the selected independent variables is absent.

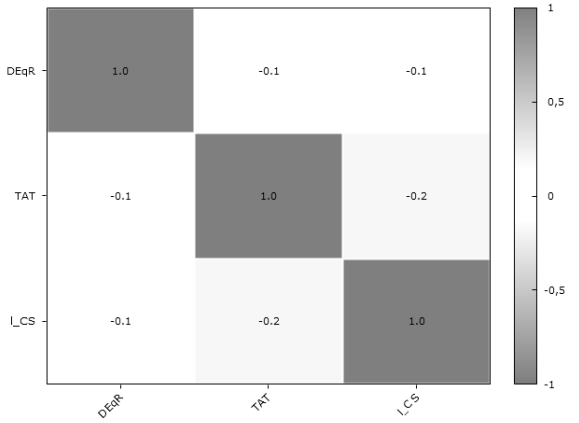

Figure 2 Correlation matrix of Model 2
Source: calculated via Gretl software package

Testing of Model 2 via Fisher's test with a probability of 0.95 is presented in table 6.

Table 6 The F critical value for Model 2

F(4, 83)	
Right-tail probability	0,05
Complementary probability	0,95
Critical value	**2,71323**

Source: calculated via Gretl software package

The basic requirement of F-test is satisfied, because Ffact (557.1204) > Fcrit (2.71323). According to the results of this test, Model 2 is considered as adequate (95%) or with a 5% probability of error. Since Ffact is higher than Fcrit, the null hypothesis about the random nature of factors is rejected and their statistical significance in the context of the influence on the dependent variable (ROA) is recognized.

Model 2 is consistent in the context of high values of both unadjusted and adjusted coefficients (95%), characterized by a lack of multicollinearity between selected independent variables, adequacy of sample data according to Fisher's test and statistical significance of all selected independent variables.

Conclusion

To ensure further progressive development and active implementation of marketing innovations, advertising companies need to increase the efficiency of their management based on empirical analysis of selected factors. The aim of this article is to determine whether financial performance has a significant influence on the advertising agencies profitability *inter alia.*

The initial data for regression analysis are: the sample consisted of 88 Slovak advertising agencies; the dependent variable is the ROA indicator for 2020 year; independent variables are CR, DEqR, TAT, l_CS for 2020 year. As a result, two models were tested. Model 1 includes all allocated independent variables, and Model 2 was built based on the previous one with the corresponding optimization of independent variables. The main hypothesis that the financial performance indicators of advertising agencies in Slovak Republic have an impact on their profitability was partially justified by testing Model 1. To test the hypothesis, Model 2 was used by excluding the independent variable from Model 1 CR, according to the results of testing which identified its statistical insignificance relative to the resulting indicator. It can be concluded from the study of the effect of financial performance indicators on the profits of the Slovak advertising agencies using Model 2 that 95.21% of the variation of ROA can be explained by the variation of such independent variables: const, DEqR, TAT, l_CS.

The paper makes a significant personal contribution to the existing body of scientific literature by presenting empirical evidence on the relationship between financial performance indicators and the profitability. Based on the analysis of advertising agencies' activities in Slovakia, it was established that their profitability (ROA) depends on DEqR, TAT and l_CS. Thus, DEqR has a negative influence on ROA, which confirms the expediency of financing the activities of advertising agencies from debt resources (loans, bonds etc.), to improve their profitability. Another indirect proof of this thesis is the absence of a significant effect of CR on ROA. To increase the profitability of advertising agencies, first of all, the efficiency of using their assets should be reinforced, in particular, assets of intangible nature, which a play crucial role in creating the long-term value of enterprises in the conditions of society digitalization and formation of the knowledge-based economy. An increase in the size of advertising agencies will have a positive effect on their profitability, which indicates the need to find ways to scale the activities of such companies in Slovakia, in particular, through transactions with mergers and acquisitions.

The results of this research could be applicable and beneficial for providers of capital for advertising agencies. It could be also used as a tool to determine key factors of profitability and to adjust companies' operational and financial policies. As a result of the research, some empirically based recommendations for improving advertising agencies' profitability could be suggested. Thus, TAT has the most important impact on the ROA of advertising agencies. It means that for such enterprises the solution for increasing profitability is to increase sales using innovative approaches for getting more customers and to reduce costs (controlling overhead costs, reducing resource waste, streamlining manual processes, streamlining workflows, ditching inefficiencies using IT solutions).

This study has some limitations, which are related to completeness of information and availability of open access to the necessary data in the published financial statements of Slovak advertising agencies. The study was conducted for the limited period of the financial reporting year 2020.

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Appendix 1

Sample for regression model: reporting data of 88 Slovak advertising companies

№	Company	№	Company	№	Company	№	Company
1	Surgitech	23	CREATIV LINE	45	Google Slovakia	67	reklama4U
2	Sales House SK	24	J&Z Partners	46	STARMEDIA Co.	68	VIZIO
3	PRO PRODUCTION media solutions	25	Freelancers	47	LEOPARD PRODUCTION	69	MARBEX
4	GULDAN - STUDIO	26	Producentské centrum TOMAX film	48	MUW DIGITAL	70	SOUND PROMOTION
5	via LS	27	BEKI Design	49	STURM	71	agentúra crea
6	Pro Media Consulting	28	RR Company SK	50	MPay Slovakia	72	4from media
7	GF and F	29	TEPEDE EDC	51	Euro - Agency	73	PEKNÁ MODRÁ
8	B.O.A.T. Publicity	30	REEST	52	UNIMEDIA	74	CLUBOX
9	ELEMENT AGENCY	31	OKAMIH	53	Service Creativ	75	TRIUMF DUCHA
10	Top Advert SK	32	A SMS	54	HENRIETTA - direct marketing	76	Better Group
11	PROXIMA-3 D spoločnosť s ručením obmedzeným	33	BRAND ADVERTISING	55	ZA advisory	77	REKLAMA Q POPRAD
12	A grafik	34	Twoagency	56	2create	78	FineMedia
13	PC News	35	voicecasting	57	idealist	79	G&G svetelné reklamy
14	M-PRESS	36	CONNY	58	Fusion Home	80	famous design
15	REDES	37	AREX - DK	59	ZenithMedia	81	Swixx Biopharma
16	ROCK PRINT	38	WEST MEDIA	60	Connect Media	82	MONDO - reklamná agentúra
17	iPARTNER	39	Berger.bros	61	EXIT model management	83	ASRS
18	UNIQSHOP	40	TRITY PLUS	62	Kliment & Fazekas	84	METS Slovakia
19	BALÍK PLUS	41	B.S. Solutions	63	starlite media	85	REBLOK
20	AKAT studio	42	goodgames	64	MultiMedia	86	H1 Slovakia
21	SolventMedia	43	Komfort AC	65	POLYGON-PREMIUM	87	COMUNIQUE
22	Grafdekor	44	EMHA – real	66	X design	88	UPTOWN PRODUCTION

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