IMPROVEMENT OF COMPANY MARKETING STRATEGY BASED ON ANALYSIS OF GOOGLE SEARCH RESULTS

Marek Ďurica¹, Lucia Švábová²

Abstract: Nowadays, Internet plays a major role in people's lives. It is usually used for entertainment, as a source of information, and also for electronic commerce. Electronic commerce (e-commerce) is gradually replacing traditional shopping, especially in the past years. It is a quick and easy form of marketing, which provides convenience for the customers, and, therefore, more and more users are using this form of shopping on the Internet. E-commerce also provides new opportunities for companies, which force them to begin dealing with the Internet. Many customers who are shopping on the Internet look for the best product or service close to their home. Most of the space in the search results in Google is occupied by local results. If a company offers some goods or services and they do not show up on the local search results, the company may be losing a lot of profits from these potential customers. That is why companies have to focus on best ranking in the local search results. In this article, we try to experimentally determine which factors affect ranking in Google search. Of course, it is necessary to quantify the impact of these factors. To select these factors and to determine their impact, we use exact methods of mathematical statistics, hypothesis testing, correlation, and regression analysis. Confirmation and quantification of the impact of some qualitative and quantitative characteristics of the company can be used to formulate recommendations for improving corporate strategy in acquiring new customers.

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Introduction

Today, electronic commerce is one of the most preferred ways of shopping. This form is very simple and fast, and it could be done from the comfort of one's own home. Therefore, e-commerce continues to acquire more and more supporters and reaches the awareness of new potential customers. The success of e-commerce is based mainly on market competitiveness. The basis is a use of the right marketing tools, among which now includes also a local search on Google, which is the source of information for customers and, in some way, influences their attitude and shopping behavior.

E-Commerce on the Internet

Internet is a medium that has a global impact on the area of sales, marketing, and communications. Internet is strongly decentralized as it is a global network. Up until now, there has been no other similar media type. With the development, availability, and connectivity, the Internet has become an integral part of the activities of companies, communities, institutions, organizations, and individuals. Therefore, we can consider the Internet as an effective communication tool. Internet provides companies and potential customers many advantages. The most important advantage is the possibility for companies in presenting their products, managing and building relationships with customers, and managing their internal processes. Internet is now a network that provides a quick way for the selection, comparison, sales, and distribution of products. With the growing number of Internet users, its function becomes a communication channel for contact with the consumer, the contact between companies, and contacts between customers (Janouch, 2014; Madleňák, 2010)

Internet has contributed significantly to the changes in marketing companies as well as in e-commerce. Information is readily available, and customers have the opportunity to compare offers, including prices, exchange views on products, evaluate them and, of course, do online shopping (Dorčák, 2012).

¹ RNDr. Marek Ďurica, PhD. University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Quantitative Methods and Economic Informatics, Slovak Republic, marek.durica@fpedas.uniza.sk

² RNDr. Lucia Švábová, PhD. University of Žilina, Faculty of Operation and Economics of Transport and Communications, Department of Quantitative Methods and Economic Informatics, Slovak republic, lucia.svabova@fpedas.uniza.sk

E-commerce in Slovakia

The first e-shop in Slovakia had already started to appear in the 1990s, but online shopping only started to spread around 2006. Most shops were established in 2010. Nowadays, the operation of e-shops abroad is not unusual. The majority of Slovak companies expand into the Czech Republic as well as Hungary, Poland, Austria, Germany, Russia, and Italy. (Káčerová, 2015)

The Slovak Internet population is close to 3.5 million users, during the previous year the number of people using the Internet in Slovakia increased by 200,000 people. (AIMmonitor, 2015).

E-commerce in tourism enterprises in Slovakia

In our research, we focused on companies in the tourism industry in which their services are sold electronically. The tourism sector includes a large number of companies and commercial establishments. We can say that e-commerce brings new opportunities and revolutionizes the realm of shopping. This is true not only for the traditional consumer goods but also for tourism. Producers and brokers of services in this area have begun to offer their products online. Every day, we can ascertain that the situation is the same in Slovakia. Tourism is undoubtedly one of the most promising and fastest growing sectors of the Slovak economy. Slovakia has great potential for tourism development due to its position in the heart of Europe at the intersection of trade routes, to the cultural and historical heritage, and to suitable climate.

Local search in Slovakia

Local search history began in 2004 when Google launched the so-called “Google Local” – local search results. Local results provide relevant information about companies in the area of the user, maps, and a local navigation. In 2005, the local search results were linked to Google maps, and, for the first time, it was possible to run them even on mobile devices. In 2007, Google launched the so-called “universal search,” which enabled the display of all results in one search page to provide the best possible overview. Since May 2009, the local search has become available in Slovakia. Instead of displaying the results in a conventional form, the user gets the search results in a form of map with points. On the map, there are names, addresses, and other specific contacts or information about companies. (Makulová, 2011)

A sample illustration is shown in Figure 1. As we can see from Figure 1, Google local search results occupy most of the space on the first page. On the right side of the page, there is a map that indicates the individual locales that Google found using the keywords written; on the left side, we can see the company name, address, phone number, and a link to Google+ profile. (Duriš, 2014)

Research aim

The aim of our research was to design a marketing strategy for a company in the tourism sector in the area of electronic commerce on the basis of statistical processing of data by organizing relevant local results in Google search. We identified characteristics of the companies that influence the ranking in the search results. Based on the data obtained and their subsequent analysis, we show the influence of company individual characteristics on Google search results ranking. Using the knowledge of the relationship between the order in the search results and company characteristics, the company has the opportunity to improve its position, which could leave to bringing in new customers and profits. The aim of the analysis was to identify which qualitative or quantitative characteristics of the company significantly affect the company ranking in the search results. The proposed strategy will be a tool to increase the attractiveness of the company.

Figure 1: Local search results

Source: Authors

Research methodology

To conduct our research, we input different keyword or better key phrases, from the area of tourism repeatedly, into Google search engine. This way, we could obtain a set of data, wherein for every search we could observe some characteristics that might or should influence the final ranking in the search. For every key phrase, we recorded the first seven results found. We put together 30 searches, which equated to 210 data points altogether.

For every keyword or key phrase search, we obtain seven resulting data points, companies, or organizations that Google search engine returns by a certain algorithm for the resulting sequence. For each company, we observed several characteristics, ranking factors, which we assumed to be important in determining the final ranking of the companies in the search. These factors are divided into qualitative and quantitative aspects. Among the quantitative characteristics of the company, they include:

- *Number of citations* in Google with the same data such as the name of the company, address, phone number;
- *Number of citations without telephone numbers* – similar like the previous variable, but without the phone number;
- *Number of +1* – this appears in company profile, it's similar as the number of "likes" on Facebook;
- *Number of followers* is the number of people who follow the profile of the company;

- *Number of evaluations* in the local profile, verbal evaluation from users;
- *Evaluation* is the average number of stars in the company evaluation from the customers.

All these quantitative ranking factors can only take on integer values (except for the variable *Evaluation*); the smallest possible value is 0. Next, we noted several qualitative factors that take the values “yes” or “no.” For further data processing, we transformed these values to integers (1 = yes and 0 = no). These qualitative characteristics include:

- *Verified company* – verified companies have next to its logo icon of the verification;
- *Keyword in the title* – an indication of whether the company has in its title the keywords related to its activities;
- *Photos* – an indication of whether the company has added photos in its profile;
- *Relevant description* is an indication of whether the company has added a relevant description in the profile, that you at least one times contain the keyword;
- *Right category* is an indication of whether the company has in its profile correctly chosen category of its activities;
- *Profile connected to Google+* (hereinafter “G+”);
- *Profile on the Web* – whether the company has a local profile is placed on the web via Google maps,
- *G+ connected to the web*. (Đurica & Švábová, 2014).

Analysis results of qualitative factors affecting the search results

When analyzing the qualitative factors, we focused on each qualitative variable separately. We investigated whether the factor is statistically significant and have significant influence on the rankings. For the analysis, we used F-test for verification of variance conformity between two groups and, then, t-test for verification of means conformity. In implementing the tests, we used a simple sorting to divide the set of measurements into groups depending on whether the company contains the factor or not. Among all qualitative characteristics, the following two proved to be statistically significant for ranking in Google search results:

- *Profile connected to G+*,
- *Right category*.

This means that the difference between the companies, those contain the factor and those do not, is statistically significant.

By separating the set into two parts, depending on the variable *Profile connected to Google+*, we found that 121 companies have connected their profile to Google+, and 89 companies have not. The average ranking of companies that have a profile linked to Google+ is 3.72, and firms without such link are in search results at about 4.4 point. The difference between the averages is 0.64. The difference in mean values has been verified by statistical hypothesis testing. The results are shown in the Table 1.

As the p-value of the test is less than the selected significance level 0.10, the significance of the difference between the average between companies with and companies without a profile connected to Google+ is confirmed. This variable is, therefore, important for placement in the Google local search results. The situation is also shown in Figure 2.

The figure shows that companies, which have a profile linked to Google + (light color) occupied the top positions in the search results, and, conversely, those that do not have a linked profile (dark color) occupied the last places.

Table 1: Test results for *Profile connected to Google+*

Equality of variances test				
Variable Profile connected with G+	Num DF	Den DF	F-value	P(F<=f) (1)
Result	121	89	1,06	0,39
Equality of means test				
Variable Profile connected with G+	Variance	DF	Confidence level	P(T<=t) (2)
Result	Equal	210	0,10	0,02

Source: Authors

Figure 2: Ranking of companies in search results based on variable *profile connected to Google+*

The second variable that has significant influence on the rank in search results is variable *Right category*. We found that 167 companies have properly selected a category for their activities, whereas the other 43 have not. The average ranking of companies with a properly selected category is 3.86 and 4.56 for the company with improperly selected category. The difference between the average ranking is of 0.6 point. Thus, we can confirm by statistical testing that this difference is significant. The results of testing are shown in Table 2.

Table 2: Tests results for *Right category*

Equality of variances test				
Variable Right category	Num DF	Den DF	F-value	P(F<=f) (1)
Result	160	43	1,26	0,19
Equality of means test				
Variable Right category	Variance	DF	Confidence level	P(T<=t) (2)
Result	Equal	203	0,10	0,08

Source: Authors

The outcome of measurements in percentage is shown in Figure 3, where it can be seen that the majority of the companies in the tourism industry has in its profile in the correct category selected. For the companies in the first positions in the search results, nearly 97% are located in the right category as stated in their profile (light color).

Figure 3: Ranking of companies in search results based on variable *Right category*

The other variables were not confirmed to be significant by using statistical hypothesis testing. The results are shown in Table 3.

Table 3: Tests results for other qualitative variables

Equality of variances test				
Variable	Num DF	Den DF	F-value	P(F<=f) (1)
Photos	146	64	1,06	0,40
G+ connected to web	64	146	1,12	0,29
Relevant description	38	172	1,13	0,30
Profile on the Web	172	38	1,00	0,47
Verified company	113	97	1,04	0,43
Keyword in the title	118	92	1,03	0,43
Equality of means test				
Variable	Variance	DF	Confidence level	P(T<=t) (2)
Photos	Equal	210	0,10	0,20
G+ connected to web	Equal	210	0,10	0,30
Relevant description	Equal	210	0,10	0,93
Profile on the Web	Equal	210	0,10	0,21
Verified company	Equal	210	0,10	0,19
Keyword in the title	Equal	210	0,10	0,73

Source: Authors

Linear regression analysis

To create the best linear regression model, for modeling the rank in Google search results, we have included all the variables, both quantitatively and qualitatively, as well as the results of ranking. By regression analysis, we looked for the best linear model depending on the order of these variables. We have used a method called “backward elimination” in our work. This means that, first, we included 14

variables, qualitative and quantitative, and the rank of companies in the model. Based on the tests of significance to their regression coefficients, we have gradually withdrawn those variables that had the smallest significance from the model. By this elimination, we finally obtained the following linear regression model (Table 4).

Table 4: Linear regression model				
	Coefficients	Standard Error	t Stat	P-value
Intercept	4,81	0,33	14,80	0
Right category	-0,60	0,34	-1,78	0,08
Profile connected with G+	-0,58	0,28	-2,07	0,04
Source: Authors				

Similarly, as well as with t-test, regression analysis confirmed that the factors *Right category* and *Profile connected to G+* have the strongest impact on Google search results ranking.

The value of the regression coefficient for the variable *Right category* takes the value of -0.60. This means that this factor increases the rank of companies by 0.6 points. Similarly, the value of regression coefficient for the variable *Profile connected to the Web*, whose value is -0.58, also improves ranking of the company by approximately 0.6 points. P-values test of coefficient significance is less than 0.10; that means the coefficient is statistically significant. By regression analysis, we found that no quantitative factors had significant effect on the final order.

Conclusion

Based on the results of our research, it is possible to suggest a model for the companies in the field of tourism to achieve the top ranking positions in Google search results. The companies should primarily focus on selecting the right categories and link their profile to Google+. By statistical hypothesis testing and regression analysis, we have shown that these two factors are decisive of the final position in the local search results for companies in the tourism industry. Google+ has recently become attractive to potential customers. With this profile, companies can add different types of contributions according to customer's interest. The customers typically decide to visit companies based on the contributions published on their profile. Companies with a local profile in Google+ have a chance to attract more attention in the search results related to their field of tourism. This is potentially a chance for companies with multiple branches located in different places to appeal to new customers. In this case, companies have the possibility of creating a profile for each of its branches. This method can also be applied particularly to hotels operating under one name or travel agencies in different locations.

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References

- AIMmonitor - IAB Slovakia, Gemius & Mediaresearch. (Ed.). (2015). *Slovak Internet population is close to 3.5 million the number of users.* (in Slovak). Retrieved from <http://www.itnews.sk/spravy/biznis/2015-01-27/c167455-internetova-populacia-sr-sa-blizi-k-poctu-35-miliona-pouzivatelov>
- Dorčák, P. (Ed.). (2012). *eMarketing, How to reach customers on the Internet.* (in Slovak). Prešov: Grafotlač Prešov, s.r.o.
- Đurica, M., & Švábová, L. (Ed.). (2014). *Improvement of corporate strategy based on an analysis of local search results in Google.* (in Slovak). Retrieved from <http://ks.utc.sk/casopis/pdf/II2014/II-2014.pdf>

- Duriš, D. (Ed.). (2014). *Local search results*. Retrieved from <http://blog.pizzaseo.com/sk/lokalne-vysledky-vo-vyhľadavani-preco-na-nich-zalezi/>
- Janouch, V. (Ed.). (2014). *Internet marketing*. (in Slovak). Brno: Computer Press.
- Káčerová, L. (Ed.). (2015). *How does the state of Slovak e-commerce market in 2013 looks like?* (in Slovak). Retrieved from <http://www.pricemaniaacademy.sk/2013/11/5/ako-vyzera-stav-slovenskeho-e-commerce-trhu-v-roku-2013>>
- Madleňák, R. (Ed.). (2010). *Electronic trading*. (in Slovak). Žilina: Žilinská univerzita v Žiline.
- Makulová, S. (Ed.). (2011). Local search as a key factor that influenced the SEO optimization. (in Slovak). Retrieved from <http://www.elet.sk/?seo-optimalizacia-1&sprava=lokalne-vyhľadavanie-ako-krucovy-faktor-ktory-ovplyvnil-seo-optimalizaciu-v-roku-2011>>