Original scientific paper

RETURN ON INVESTMENT ON FACEBOOK ADDS: QUANTITATIVE RESEARCH

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Abstract:
Facebook ads are widely used by companies around the world who spend significant budget on this promotional tool. We focus in this research on financial returns of Facebook ads designed towards reaching sales (conversions), particularly short-term profitability. The aim of this research is to give answers to the questions of interest to mangers and academics: how profitable is Facebook advertisement for businesses and what factors affects profitability. To achieve the goal we analyse data of 258 Facebook ad campaigns on monthly bases, made by the group-buying site Grouper. Firstly, we measure return on investment on Facebook ads (ROFI) as indicator for short-term profitability. The results show that one Euro investment in Facebook ads will return eight Euro on average. Secondly, to explore what factors affects ROFI we perform regression analysis and results show 'cost per conversion' to be a significant factor affecting ROFI or a decrease of 1 percentage in cost per conversion will increase ROFI for 12 points.

Keywords: e-commerce, promotion, digital advertising, group buying site, ROFI, North Macedonia

JEL classification: M27, M37

INTRODUCTION

Social media and the internet has completely changed the way of communication and more importantly it has completely transformed the approach to marketing. For marketers social media became a dynamic space to reach customers, interact with them and listen their voices for better impact (Hewett et al., 2016). What is even more important for this new marketing tool is the possibility for companies to get immediate feedback, reviews, complaints and suggestions from their customers. Furthermore, social media has enabled companies to get timely reports and vast information about the customers' activities. Facebook is the market leader and was the first social network to surpass 1 billion registered accounts, and in the second quarter of 2020 sits at more than 2.7 billion monthly active users (Statista, 2020). Promoting a business via Facebook serves as a very attractive business proposition due to the vast amount of steady traffic every day. Facebook advertising is a tool that all companies can afford. Small companies can reach marketing and business goals with Facebook ads considering the ease of access and tailored budgeting towards goals to be achieved. The number of Facebook active advertisers is growing and for many companies Facebook is the preferred social media platform (De Vries and Leeflang 2012; John et al., 2017). In the second quarter of 2020, the number of companies that were using the social networking platform Facebook to promote their products and services reached nine

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million compare to 3 million in the first quarter of 2016. Facebook's annual revenue from advertising in 2019 amounted to 69.6 billion U.S. dollars, a 27 percent increase from 55 billion U.S. dollars in 2018 (Statista, 2020). Companies all over the world are using this globally widespread marketing tool and spend substantial amount of money on Facebook ads. The basic definition of marketing indicates achieving maximum results with the use of limited company resources and developing products and services to meet customer needs (Hajir, 2012).

The growing expenditure for Facebook advertising opens up questions like: "What is optimal amount invested in advertising that will maximize the return; How can the company decide the amount to spend that will get the maximum return; and what is the breaking point of investing when the return starts to decline?", hence and opens up a new area of research focused on analyzing the optimal investment in Facebook ads, which will help managers make better decisions and maximize the return on investment of ads.

Ertugan (2017) points that companies need to understand the correlations between their social media activities, online advertising and the benefits gained from such efforts. Quantifying the results achieved with the promotion and assessing the effectiveness of Facebook advertising is one of the biggest issues for companies. Dalessandro, et al., (2015) research is focused on evaluation and optimization of online advertising and point that site-visit proxy can be better than clicks, clickers do not resemble buyers. Different goals can be achieved with Facebook advertisements, like building awareness, crating engagement, acquiring new users and customers, brand promotion that is difficult to immediately be measured in revenue effect but will contribute to revenue increase on long term, etc. Semerádová and Weinlich (2019) point that all of these partial steps contribute to creating the brand's image and finally selling the promoted goods and services. Powell et al. (2011) presented negative opinions about measurement of return on investments in social media marketing. Despite the fact that the return on investment of social media initiatives is difficult to identify and quantify, Kaske et al. (2012) discuss the need to establish a framework that enables the profitability of social media to be evident. Specifically focusing on the marketing context, significant attempts have been made by researchers to identify how to measure key impacts of social media in relation to marketing; however, there remains a lack of empirical data and no comprehensive overview of what return on investment can mean for an organisation seeking returns from their social media adoption. Thus, what is noticeable within the literature is that in relation to the topic of Facebook advertisement and return on investment, there is a lack of empirical research.

The goal of this research is to answer questions of interest to practitioners and academics toward short-term profitability: RQ1: How profitable is Facebook advertisement? , and RQ2: What factors affects the profitability?. To achieve this task we use exploratory case study of group buying site Grouper. Information that are offered by 'Facebook Ads Manager' and internal data provided by the company represent the base for calculation. We analyse 258 Facebook ads aimed towards increasing sales in the period of January 2015 to December 2016 on a monthly base. To answer RQ1 we measure ROFI to find out short-term profitability. To find out the correlation and most significant factor that influence the ROFI and answer the second research question (RQ2) we use regression analysis. We believe that the research can help marketers in making decisions towards optimizing their efforts in this effective promotional tool. In line with this, our study contributes to the practice by giving

valuable insights to practitioners, but even more important it contributes to the theory. In theoretical terms, we contribute to the realm of literature on Facebook advertising especially on measurement of short-term financial return, a topic that merits more attention. So far, only little research has systematically studied Facebook advertising from this perspective or from an assessment of performance of Facebook ads toward achieving sales goals.

The rest of the paper we organize as follows. Section 2 reviews the literature on measuring the effects of social media marketing. Section 3 discusses the data and methodology. Section 4 presents the results. Section 5 concludes.

1. LITERTURE REVIEW

Companies are directing more resources towards marketing activities as marketing is essential to most businesses and is generally the most important aspect of any business strategy (Kumar and Basu, 2008; Stewart, 2008). Companies aiming to create long-term links with customers in order to obtain their trust, loyalty, and profitability spend a vast amount of financial resources in marketing (Anderson, et al., 2004). Therefore, investment of significant financial resources in advertising activities requires justification of such allocation (Ambler, et al., 2004; Ward, 2003; Wills and Webb, 2007). Kotler and Connor (1977) almost 4 decades ago brought to interest the issue of the concept of marketing effectiveness. Hence, it became important to develop quantitative methods for measuring the financial return of marketing actions. In particular, it became important especially for advertising, in order to prove that these are investments from which a return can be expected and are not an expense with an unquantifiable return. In the following years task of many academics and managers was to demonstrate how marketing increases the financial capital of firms (Jagpal, 2008; McDonald, 2006; Ryals et al., 2007). As social media marketing was evolving to became widespread advertising tool, the interest of many researchers was focused to exploring the effects of social media.

The early history of social marketing return on investment measurement has presented negative opinions about measurement (Powell et al., 2011), and companies have left the idea of measuring return on investments, as a success for social media (Crosti 2013). Despite the fact that the return on investment of social media initiatives is difficult to identify and quantify, Kaske et al. (2012) discuss the need to establish a framework that enables the profitability of social media to be evident. Thus, what is noticeable within the literature is that in relation to the topic of Facebook advertisement and return on investment, there is a lack of empirical research. This may be owing to the fact that many organisations are still trying to comprehend how to develop a social media strategy and identify the skills required for successful strategy execution, which has led to less attention being given to the actual metrics that companies will aim to use.

Widely used metrics to explore the performance of an investment is 'return on investment' that presents the indicator of the profitability of the investment that a company makes for reaching business goals. Companies' executive managers' decisions are largely based on profit maximisation and they constantly have to consider trade-offs between competing strategic marketing initiatives and profit generated by marketing activities (Kaske et al., 2012). In this context Kaske et al. (2012) address some issues to be considered when taking ROI as metrics in measuring marketing

activities because of their specifics. First of all, return on investments measures ignore the long-term impact of brand equity which can lead to an underestimation of the financial impact of social media initiatives and result in creating inaccurate forecasts for future time periods. Secondly, senior management rely hugely on financial metrics that are insufficient to quantify and justify marketing investments, which calls for non-financial metrics to be used because of lack of approval (Kaske et al., 2012).

Companies of all sizes started to adopt social media marketing as they saw potential and ease to use this marketing tool. Facebook advertising offers easy to use tailored promotion upon targeted audience for achieving business goals. Regarding effectiveness of social media initiatives on the longer term, the measurement of the return on investment of social media/effectiveness is a key factor for the long-term success of activities such as social media marketing (Gilfoil and Jobs 2012). Some researchers proposed return on marketing investment as a management philosophy to transform companies' commercial actions into financial results (Cook and Talluri, 2004; Klein and Swartzendruber, 2003). The relationship between marketing and finance has become one of the most important research areas for the marketer researchers (Barwise and Farley, 2004; Gruca and Rego, 2005; Lehmann, 2004; Moorman &and Lehmann, 2004; Rust and Others, 2004). Marketing return on investment can be used to assess the return of a specific marketing program, or the firm's overall marketing mix. Tafesse, and Wien (2018) found that social media performance is strongly associated with marketing performance and develop measurement scale for social media use. Buhalis, and Mamalakis (2015) evaluate the effectiveness of different social media return on investment in the hotel industry context. The rising costs of businesses for Facebook naturally prompts the questions of value of return and whether or not social media can really deliver positive return on investment (Lilburne, 2016).

2. METHODOLOGY AND DATA

We employ explanatory case study methodology to examine and verify the status of Facebook ad campagnas towards short-term profitability. The company in consideration is leading group buying/deals platform in North Macedonia: Grouper.mk. Furthermore, the author is cofounder and was CEO of the company in the period of investigation. The company was founded in January 2011. The website acts as an intermediary between end-users and retailers, providing a wide range of goods and services from household appliances to travel services to online education courses. Grouper is not just the first online group buying site on the Macedonian e-commerce market, but is leader in the e-commerce industry holding 40% of the market share in Republic of Macedonia in 2012 and 2013 (Angelovska et al., 2020). Facebook advertisement is widely used marketing tool in the observed company and it is used for promoting various deals and offerings to potential customers. For the purpose of this research, we analyzed 258 Facebook ads, run by Grouper whose goal was 'conversions' i.e., reaching sales, in the period January 2015 to December 2016. Facebook Ads Manger offers quantification with the detailed reports it provides and implementing the Facebook pixel enables precise tracking when it comes to online shops and marketplaces that have websites where users need to take action (usually purchases), such as in our case Grouper.mk, which is 'pure-play' online company where shopping is done exclusively online on the site. Grouper has implemented the

Facebook pixel, hence makes use all the benefits offered by the pixel. When calculating the return on investment, the data for conversions from the Facebook pixel is used. Data is generated by Facebook and can be found in the Facebook reports of the company platform used by Grouper to create and monitor Facebook campaigns. With the help of the implemented conversion pixel, Grouper measures the value of each conversion, i.e. for each purchase made. This allows accurate and precise display and measurement of the return on investment from the particular Facebook campaign. In order to calculate the return on investment, it is necessary to know the income from it and the invested funds, i.e. the cost for the same (Eq. 1). Both measures use internal data from Grouper's database of Facebook ads. The cost of the campaign is the funds invested in Facebook ads, on a monthly basis, while the revenue is the profit received from the ad, in Grouper's case that is the commission that the company earns from the sale made by a user who clicked on the ad and then made a purchase. For the calculations, we take the total earnings (which is the sum of all individual earnings per conversion made as a result of Facebook ads).

$$ROFI_t = \frac{FRevenue_t - FCost_t}{FCost_t}$$ Eq. (1)

$ROFI_t$ is return on Facebook ads investment in month t
$FCost_t$ is Facebook Ad investment in month t
$FRevenue_t$ is revenue earned from Facebook ad conversion

After calculating the ROFI, we test the dependence of the ROFI on the budget invested in advertising, the cost per conversion, the number of conversions and the revenue from conversions. The data source is Facebook Ads Manger report and the variables are: monthly investment in Facebook ads, number of Facebook ad campaigns, number of conversions, cost per conversion and earned revenue or the revenue that Grouper earned from the orders (purchases) made by the users as a result of the campaigns. We perform multiple regression analysis in order to test the variables, where ROFI represents the independent variable. Several factors are used in this analysis in order to assess the impact of each factor. More specifically, an attempt has been made to quantify the influence of different variables on one independent variable. Hence, the method used employs the following equation:

$$y_{it} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots \varepsilon_t$$ Eq.(2)

Where:
Y_{it} is a dependent variable;
$\beta_0 \ldots \beta_v$ are regression coefficients;
$x_1 \ldots x_n$ are independent variables;
ε_t is a random error that is normally distributed with a mean value of zero

A detail description of the variables we use for analysis and sources of data are extracted from or calculated as presented in Table 1.

Table 1. Description and sources of the variables

Variable	Description	Source
Budget	Expenditures Invested in Facebook Campaigns	
Campaigns	Number of published campaigns	
Number of conversions	Orders made as a result of ads from users who clicked on the ad and then made a purchase of a deal.	Facebook Ads Manager Grouper Profile (Reports)
Conversion cost (EUR)	Total expenditure budget for the campaign / total number of conversions from it	
Conversion income (EUR)	The revenue that Grouper earned from customer orders (purchases) as a result of campaigns	
ROFI Rate (%)	Return on Facebook ads Investment rate	Calculated by Eq. (1)
Total number of orders	Total number of realized orders in Grouper in the month	Internal data from Grouper
Total earned income (EUR)	Grouper's total earned income in the month	
Facebook share in revenue	Share of revenue generated from Facebook ads in total revenue	Result of dividing revenue generated from Facebook ads by total revenue
Facebook share in the orders	Share of the number of orders as a result of Facebook ads in the total number of orders	Result of dividing the number of orders realized from the Facebook ads with the total number of orders

Authors' explanations

3. RESULTS

In order to answer the first research question we calculated ROFI using Eq.1 and we present descriptive statistics in Table 2. The mean ROFI is 7,9 (ROFI rate 790%) with minimum 2,9 and maximum of 14,6. The results show impressive return on investments, meaning that on average one Euro invested in Facebook ads will return eight Euro to the company. Beside the descriptive statistics of our dependent variable ROFI, we present in Table 2 descriptive statistics of the independent variables used for regression analysis. The mean of the invested monthly budget for Facebook ads is 1.140 Euro in the range of 189 minimum to 3.041 Euro, maximum. The mean monthly conversion revenue is 7.782 Euro in the range of 2.367 minimum to 13.453 Euro maximum. The mean of cost per conversion is 0,55 in the range of 0,22 minimum to 1,06 Euro maximum. The average number of conversions is 1.948 in the range of 745 to 4.475 maximum. In addition to the mean and standard deviation, the table shows the indicators needed to test the normality of the variables, and the calculated coefficients of asymmetry (skewness), kurtosis with which the Jarque-Bera (JB) normality test is performed. Due to deviation from normality of the variable - number of conversions, we use logarithmic form in regression analysis. The probability of rejecting the null hypothesis of normality largely exceeds the critical level of significance, confirming that all other variables are normally distributed.

Table 2. Descriptive statistics of the variables

	ROFI	Budget	Conversion revenue	Cost/conversion	# of conversions
Mean	7,941838	1140.250	7782.542	0.548750	1948.250
Median	7,158150	945.5000	8103.000	0.530000	1963.500
Maximum	14,63980	3041.000	13453.00	1.060000	4475.000
Minimum	2,937700	189.0000	2367.000	0.220000	745.0000
Std. Dev.	3,982663	785.1471	3085.328	0.265859	774.0706
Skewness	0,422185	0.701856	0.097745	0.441949	1.128246
Kurtosis	1,902151	2.546760	2.205085	2.036674	5.939189
Jarque-Bera	1,918234	2.175836	0.670107	1.709273	13.73059
Probability	0,383231	0.336917	0.715300	0.425438	0.001043
Observations	24	24	24	24	24

Source: Authors' calculations.

To check the dependency between the variables under investigation we perform correlation method and results in partial correlation matrix between the variables are presented in Table 3. We can conclude that the dependent variables have high negative correlation coefficients with the independent variable ROFI rate.

Table 3. Correlation matrix

	ROFI	Cost/conversion	Conversion revenue	Budget	# of conversions
ROFI	1,00				
Cost/conversion	-0,84	1,00			
Conversion revenue	-0,45	0,53	1,00		
Budget	-0,81	0,83	0,77	1,00	
# of conversions	-0,52	0,38	0,83	0,76	1,00

Source: Authors' calculations

Finally to give an answer to second question of this research, we perform linear multiple regression with ROFI being the dependent variable, while budget, conversion cost, number of conversions, and conversion revenue are independent variables. The regression use monthly data (24) in the period from January 2014 to December 2015. We present the results of regression analysis in Table 4. In order to determine the representativeness of the obtained results, i.e. whether the regression coefficients can validly predict the ROFI rate or the estimated regression line can be adjusted to the empirical data; the coefficients of multiple determination as well as the standard error must be considered. The value of the determination coefficient (adjusted R^2) is 0.79, which means that approximately 80% of the variations of the dependent variable can be explained by the influence of all independent variables, when taken together. The standard regression error is 1.8. The F-statistic is 23.1 (p = 0.0000), which means that the regression is statistically significant. To ensure the authenticity of the result, the Durbin-Watson test is additionally calculated. The Durbin-Watson test is a number that shows the autocorrelation of the residues from the statistical regression and that number ranges from 0 to 4. A value around 2 means that there is no autocorrelation. The Durbin-Watson statistic is 1.9, which means that the residuals have no autocorrelation. The regression coefficients of the variables: cost per conversion, conversion income and number of conversions are statistically significant at the significance level of 0.01. The coefficient of the variable cost per conversion is negative and is economically

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significant. The budget variable is neither statistically significant nor economically significant. The regression coefficient $\beta_0 = 52.19$ is also statistically significant and determines the point at which the estimated regression plane intersects the y-axis.

Table 4 Regression results for ROFI dependency assessment

Dependent variable: ROFI Method: OLS Included observations: 24				
Variable	Coefficient	Std. Error	t-statistic	Prob.
# of conversions	-12,47726	3,545532	-3,519151	0,0023
Cost/conversion	0,000693	0,000240	2,884248	0,0095
Conversion revenue	-0,000461	0,001692	-0,272314	0,7883
Budget	-5,636465	2,349835	-2,398664	0,0269
C	52,18853	16,59614	3,144618	0,0053
R-squared	0,829305			
Adjusted R-squared	0,793369			
S.E.of regression	1,810385			
F-statistic	23,07743			
Probability(F-statistic)	0,000000			
Durbin-Watson stat	1,903850			

Source: Authors' calculations.

By constructing the regression equation (Eq. 2) ROFI can be calculated at different values of the independent variables. ROFI = 52.19-12.48 * cost per conversion + 0.0007 * revenue per conversion - 0.0005 * budget - 5.641 * logarithm of number of conversions. But the interpretation can be simplified so that a 1% reduction in the cost per conversion, with the other unchanged independent variables will result in 12.48 point increase in ROFI.

4. CONCLUSION, IMPLICATIONS AND LIMITATIONS

Facebook ads are widespread marketing tool used by all companies convenient for companies of all sizes enabling tailored approach according to the available resources and budget. Even with small investments compared to other tools companies can reach targeted customers and achieve different business goals. Grouper's most significant and important channel for promotion, creating and maintaining user and customer engagement, increasing sales and acquiring new customers is social media, Facebook in particular. Our main aim in this study is to find out the shot-term profitability of the Facebook ads and to point out the factors that deserve the greatest attention of managers and marketers looking to maximize their returns and profit. For the purpose of this research, we analyzed 258 Facebook ads, run by Grouper whose goal was 'conversions' i.e. reaching sales, in the period January 2015 to December 2016. We perform multiple linear regression to test the dependence of the ROFI variable on the independent variables: ad expenditure budget, conversion cost, conversion revenue and number of conversions. Results indicate that the budget invested in advertising is neither statistically nor economically significant, and does not affect the ROFI rate. The cost per conversion is statistically significant, and a 1% reduction in the cost per conversion, with the other unchanged independent variables will cause a 12.48-point

increase in the ROFI. Facebook shows that it can be an effective advertising tool that can bring short-term financial returns.

The findings in this research have practical and theoretical implications. They can serve practitioners, marketing managers and executives with making decisions towards achieving sales goals with Facebook advertising. In theoretical terms, our paper contributes to the literature on Facebook advertising particularly on measurement of short-term financial return, a topic that merits more attention in the marketing field. So far, only little research has systematically studied Facebook advertising from this perspective or from the point of assessment of Facebook ads performance towards achieving sales goals.

The results obtained during the study have some limitations. The proposed structure of this study on the assessment of short-term profitability and factors that affect it, is tailored only to those marketing campaigns on Facebook that were designed aiming to reach 'conversions' as the main goal.

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