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THE INFLUENCE OF COVID-19 CRISIS ON SOCIAL MEDIA COMPANIES STOCK PRICES

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Abstract:

Technology and the internet development has led to changes in communication, therefore companies are increasingly recognize the importance of social media as a communication strategy. The aim of this paper is to determine whether social media have achieved expansion and recorded an increase in stock prices during the COVID-19 crisis. The research covered five social media companies (Facebook, Twitter, Snapchat, Pinterest and Weibo), which have listed shares on the stock markets. The results of the research showed that in the situation of a global pandemic considering digitalization, there is an increase in the number of users of social media, and that importance of investing in online advertising and e-commerce through social media has been recognized. Despite this, there is not the same positive impact of the COVID-19 crisis on all five observed social media companies and their stocks, and it is possible that increases and decreases in stock prices will not continue in the following periods in the same trend.

Keywords:

Stocks, Social media companies, Financial market, COVID-19 crisis.

INTRODUCTION

Social media on the internet enable activities such as publishing, sharing, creating and actively participating in various content, through which is possible to monitor virtual communities at the global population level and find out interests, thoughts and intentions in terms of various economic, political and cultural events [1]. The term „social media“ was first used in 1997 when the first social platform, Six Degrees appeared [2]. Until today, this industry continues to expand and prosper, and it has become an exceptional tool through which it is easier to reach target groups, whether they are customers or investors. As internet habits and new trends in social communication develop extremely fast, investments in social media companies are constantly increasing, which is reflected in the prices of their stocks.

The focus of research in this paper is on the factors that caused the changes in the stock prices of social media companies. Research about the impact of the COVID-19 crisis on the expansion of social media

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companies is of great importance in order to explain the changes in the price of their shares on the stock exchange. Research that has dealt with the phenomenon of social media and pandemic indicating the impact of the crisis on this sector, can be found in the literature. Therefore in paper Susanto (2021) emphasizes the importance of using social media companies during a pandemic in order to reduce costs and increase business efficiency [3], while Cuello-Garcia (2020) shows the role that social media has on information and disinformation during the pandemic [4].

In times of economic crisis, investors need technology to get high-quality data in a timely manner and understand the impact of COVID-19 on stock market index. Hence, the combination of available information on stock exchanges and Big data in real time placed through social media, influenced the decision-making process of investors. In time of crisis greater interaction with target groups was achieved through social media. In order to achieve communicate faster and better with customers, partners and investors, companies have given more importance than ever to online campaigns, promotions and advertisements crating attractive and relevant content that would evoke desires and interests, which were placed through social media. Today, the shares of many social media companies are on the stock market, many of them are just on their way to achieve that, slowed down by regulations and ordinance that have led them to remain private. But there are a number of social media companies that attract attention by selling their stocks to the public for the first time. Therefore, there are frequent advices which note that when it comes to the upcoming boom of high IPOs, should still be careful, and an additional reason is the COVID-19 crisis. The COVID-19 pandemic as a global health problem not only affects the routine and habits of people, but also affects the state of the economy. Certain sectors of the economy, such as tourism, catering industry and transport, have been most affected, which has led to major changes and has effects on financial stability and the situation on the stock markets.

2. LITERATURE REVIEW

Observed throughout history, it is evident that pandemics as an external shock, have a negative effect on the economy, macroeconomic and investment environment, which ultimately effects the situation in financial markets. The COVID-19 crisis has created an unstable environment that has changed the sate of stock market

around the world. Some authors compare the situation on the stock market with the effects of the H1N1 [5] from 11 years ago. The devastation in the global economy caused by the pandemic is shown on a scale not seen since the Great Depression [6], and that even the Spanish flu did not have as much of an impact on the US stock market as COVID-19 [7]. Observed by the change in the value of stock market indices, a regional character can be noticed because a larger decline in the value of stock market indices was recorded on the US stock market than on the stock markets in Asia and Australia [8].

Whereby stock prices represent potential future profit, concerned statements by investors on social media about future investments may affect the stock market during COVID-19. Using methodological approaches that can identify and analyze a large amount of market-driven information found in real-time online stock market forums, Ranco (2015) [9] and Sprenger (2014) [10] did research on how news posted on Twitter affected stock price movements.

For forecasting movements on the stock market, analysis of factors that affect the change in the stock prices of social companies, sentiment analysis was applied and data from social media were used, such as attitudes, feelings, emotions and opinions that play a role in assessing investors' opinions. There is empirical evidence that activities on certain social media, such as Facebook, have different effects on trading by different investors. Considering that Facebook is not official information channel, company will presumably strategically chose which information to distribute through this social media, which suggests that less sophisticated investors (who do not have access to professional data sources) will rely on this source [11]. In a growing market, such as the IT services market, investors rely more on optimistic reports and neglect those with a negative and warning signals. In a declining market, there a high probability, for investors to be more sceptical and analyse more pessimistic reports [12]. At the beginning of the COVID-19 pandemic in just 4 days in February 2020, the S&P 500 lost over USD 500 trillion [13]. Fear of uncertainty and the assessment that the company's profit will be reduced, had an impact on the lowest and highest prices of stock indexes in the United States. Therefore, it can be expected that the crisis will also affect on the stock prices of social media companies companies.



3. METHODOLOGY

In this research, the trend of stock prices of social media companies was analysed in order to determine the effect of the COVID-19 crisis on the change in stock prices of social media companies. This study include only those social media companies that have listed stocks, starting from the moment they are listed on the stock market. Table 1 shows five social media companies whose stocks are listed on the stock exchange market, as well as basic data on the year of establishment, the date of the initial public offering, the number of employees and market capitalization.

Name	Year of establishment	Date of initial public offering	Number of employees	Market capitalization (in billions)
Facebook	2004	18.05.2012.	58604	857.52
Twitter	2007	07.11.2013	5500	53.53
Sina Weibo	2010	17.04.2014.	5073	11.69
Snapchat	2012	02.03.2017.	3863	92.46
Pinterest	2008	18.04.2019.	2545	47.13

Table 1 – Information about social media companies

The companies in the selected group do not have significant differences in the type of selected business activity, each of them refers to the social media. Differences appear only in the presentation and use of the displayed content on each network individually.

4. RESULTS AND DISCUSSION

The first company in the field of social media companies was registered in 1997. Since then, until today, their number has been constantly increasing. There are over 100 social media on the market today, with 3.6 billion users [14], and the value of this market is estimated at around USD 94.83 billion in 2020.

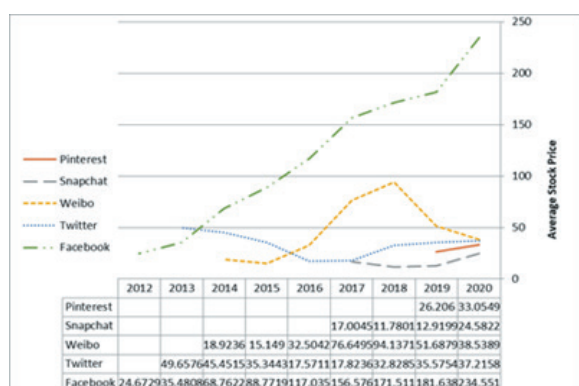


Figure 1: Relative ratio of the average annual stock price

The analysis will follow the change in stock prices from the first initial sale to April 2021. The analysis will observe: i) The trend of the average stock price on an annual basis; ii) Price change after the COVID-19 pandemic crisis; iii)

The relative ratio of stock prices between the observed social media companies; and iv) Defining the key factors that have influenced the changes in the share price of the observed companies.

Facebook is the fifth largest company in the world with a market capitalization of USD 756.74 billion. Although it has still lagging behind Alphabet (Google), the market capitalization value of Facebook is significantly higher than the nearest competitors such as Twitter or Snapchat. Primarily Facebook generates revenue by selling advertising space on its platforms, which include a social media website, mobile messaging apps Messenger and WhatsApp, 3D virtual reality Oculus, as well as an Instagram app for sharing photos and videos. Comparing 2020 with the previous year, advertising revenue increased by 22%. In 2020, Facebook generated advertising revenue of USD 84.17 billion which makes 98% of the company's total revenue.

Facebook made its initial offer on May 18, 2012 (Figure 1) and raised more than USD 16 billion, making the largest IPO of USD 38 per share. Facebook had a large number of strategic acquisitions that fueled its growth, and for the purposes of this paper, we will focus on the acquisition with the social media company Instagram in 2012 which in 2019 generated 31.8% of revenue, from the total revenue generated by advertising.

On the other hand, Twitter, after an initial public offering of USD 26 in November 2013, recorded a decline in the value of the stock, which can be seen in Figure 1.



During the period 2016-17, stock price dropped below the initial public offering to just USD 13.73 per share. Twitter divides its revenue into two categories, sales of advertising services, which make up the vast majority of the company's revenue; then data licensing and other services. During 2020, Twitter, in the name of advertising services generated USD 3.2 billion, or 86% of revenue, which is 7% more than in the previous year [15].

Snapchat ended 2020 with a net loss of USD 944.8 million, which is 9% less than in 2019, when it amounted to USD 1 billion. This data was not surprising because the company recorded a net loss in the previous 5 years. The largest net loss was recorded in the first quarter of 2017, when the company was listed on the stock market. Rewards to employees, primarily the company's CEO in the form of shares in the amount of USD 2.6 billion, are significant reason for the net loss. The price per share during the initial public offering of USD 17 reached USD 24.48 at the close, followed by a drop to the lowest price per share of USD 4.99 in December 2018. Snapchat then faced direct competition and slowed user growth, after Instagram, which is owned by Facebook, launched the Instagram Stories feature, essentially similar to the function that Snapchat own.

Snapchat generates its revenue mainly from the sale of advertising space, and 99% of the total revenue in 2020 is generated on this method [16]. Revenue during 2020, in the conditions of a pandemic, increased by 46.1% compared to 2019.

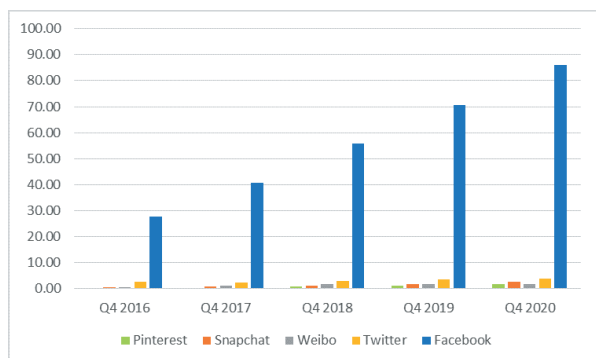


Figure 2: Facebook, Twitter, Pinterest, Weibo and Snapchat total revenue

Pinterest generates revenue by displaying ads on its web and mobile application, and approximately two-thirds of its revenue of USD 1.692,7 million in 2020 was generated through advertisements, which is 48% more than in the previous 2019.

The amount of market capitalization in April 2021 exceeds USD 37 billion. During the COVID-19 crisis, the lowest price per share was USD 11.64 in March 2020, and it ended the same year with a price of USD 65.90 per share, on December 31st at the close. It reached its highest price of USD 89.15 per share in February 2021.

As well as the previously mentioned companies, Sina Weibo (abbreviated to Weibo only) generates a significant majority of its revenue from advertising and marketing services – USD 1.486 out of a total of USD 1.689 million of revenues. During 2020, Alibaba alone generated revenue of USD 188.6 million. Weibo is often described as the Chinese equivalent of Twitter and Facebook, considering these two companies are blocked in China because of political incidents. Nevertheless, Facebook generates significant revenue from this country, presenting it in its annual financial report for 2020, which is linked to a limited number of resellers representing advertisers based in China [17].

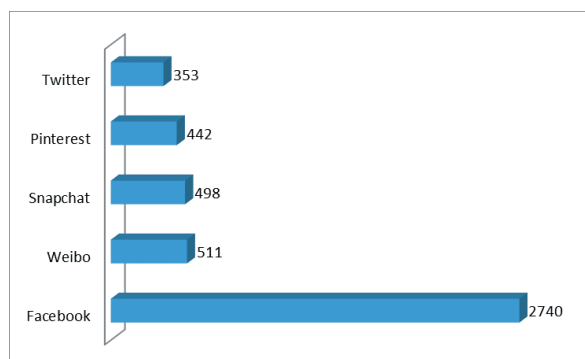


Figure 3: Active monthly users, in millions, January 2021

Figure 3 shows that the beginning of 2021 Facebook started as the most frequently used social media platform with 2.74 billion monthly active users, which is significantly more than the remaining four companies.

In the entire family of applications, Facebook includes Instagram, WhatsApp and Messenger with a monthly number of active users reaching 3.3 billion users. Considering Figure 1 and the collected data on the trend of the average annual stock price of five companies, it can be pointed out that only Facebook has a continuous growth trend of stock prices from 2012 until today. As it has only been listed on the stock market for one year, Pinterest does not provide enough information by year for comparison.



After the outbreak of the COVID-19 crisis, the largest increase in stock price in 2020 compared to 2019 was achieved by Snapchat with an annual average growth of 90.27%. The last closing price in 2019 was USD 16.33, while at the end 2020 it was USD 50.07 with an average change of 206.61%. Right behind Snapchat is Facebook with a 29.13% increase in the average stock price in 2020 compared to 2019; then Pinterest with 26.14% and Twitter with 4.6%. Weibo is the only one of the five observed social media company with a decrease of 25.44%.

According to the latest available data, at the close on April 30th 2021, the highest value of shares had Facebook – USD 325.08. The value of Facebook share is about 5 times higher than the value of shares of other social media companies. The value of Snapchat share was USD 61.82; Twitter USD 55.22; Pinterest USD 66.37 and Weibo USD 50.40. Facebook company has a large amount of user data at its disposal to help targeted marketing; the company has also recognized the future importance of networks and conducted acquisitions of Instagram and WhatsApp networks. This enabled it to cover a larger target market through photos, text, publications and communication, as well as a higher engagement rate. The engagement rate provides data on the percentage of people who viewed, responded to, commented on, or shared a post that can measure customer potential. This is an important difference in relation to other social media companies that are the subject of this paper, and which do not have such diversity in activities.

Harmonization with regulations also contributed to a sharp increase in Facebook's revenue from advertising. Legislation issues have been discussed in 2018 when it was found out that Cambridge Analytica had collected the personal data of millions of people without their consent and used it for political advertising purposes. After synchronization with the law in 2019 and the increased number of users, the shares of the Facebook achieved significant growth. Last year Facebook pointed out that privacy regulations and changes to the updated Apple iOS 14 software could interfere with ad targeting and affect the price of ads.

This regulation would require from users to consent to the collection of data and their monitoring by social media. Otherwise, both the social media companies and advertisers would be denied feedback on ad performance. In March 2021, the price of the Facebook stock achieved an increase of 4.1% after the announcement of the company on the prediction of positive outcomes related to this regulation. This company has introduced protocol that consolidate and delay reporting, but at the

same time allow the measurement of campaign results. Advertisers expect changes in Facebook's advertising and business tools, delivery, measurement, audience selection and reporting. Such changes are still accompanied by rising stock prices.

The COVID-19 crisis in the previous year was crucial for the introduction of e-commerce in the application of Facebook, Instagram, WhatsApp and Messenger, especially after the reduced financial potential of advertisers, but this regulation certainly accelerated the whole process. The effect of the COVID-19 crisis on Facebook was manifested through price growth, so that the highest price per share of USD 303.91 was reached on August 26th, 2020 (macro trends 2021). This growth in shares was probably preceded by the strengthening of the Feed news function and the association with Shopify, Tienda Nube, BigCommerce, Cafe24, ChannelAdvisor, WooCommerce to support small businesses and launched Facebook shops, a new online shopping platform. During the COVID-19 crisis, Facebook achieved a growth of the daily active users by 11% compared to 2019 and the level of engagement observed through the number of likes, comments and followers, precisely due to the fact that there was lockdowns and digitalization of business. In the first quarter of 2021, the company continues the trend of revenue growth, active users, which leads to the highest share price in April of USD 329.51 per share.

It can be noticed that during 2020, Twitter recorded an increase in the average value of shares of 4.9%. In such a way, 2021 for this company started with a price of USD 54.49 per share, but already in January it declined about 17% and a price of USD 45.18 which is associated with account suspension of former US President Donald Trump. Following the published results for the fourth quarter and fiscal year, stocks increased about 41%, after that on March 1st, 2021, was reached the highest share price of Twitter at USD 77.63 at closing (macro trends 2021). April brought another drop for Twitter's shares and a price of USD 55.22 at the closing on April 30th. This was preceded by the first quarterly report for 2021, which, despite the increase in revenue and number of active users, shows an estimate that the next quarter could be weaker because costs are expected to increase due to a rise in the number of employees and a decline in advertising revenues as a result of the crisis.

COVID-19 brought for Weibo a 2% reduction in sales and marketing costs from USD 465.3 million in 2019 to USD 455.6 million in 2020. The change was due to diminished promotional activities. However, there was also a slower collection of receivables and a 3% de-



crease in advertising and marketing revenue as the number of advertisers decreased from 2.4 million in 2019 to 1.6 million in 2020. Weibo also encountered a drop in active users from 241 million in the first quarter of 2020 to 225 million in the last quarter of the same year. Shares of Weibo began to fall even after the government announced the investigation of Alibaba market abuse which has a 30% stake in Weibo.

Pinterest also reached its highest price per share of USD 89.15 in 2021. This was preceded by the published report for the fourth quarter of 2020, which showed an increase in revenue of 76% to USD 706 million, which contributed to the growth of the number of monthly active users of 37%. The advantage of this company is in the content that is focused on products, projects, hobbies and ideas, while platforms like Facebook are more focused on the exchange of personal data.

The COVID-19 crisis brought the highest stock price increase for Snapchat so far. The reason for this is the highest rate of daily active users – 265 million; which is 22% higher compared to the same period a year earlier; generated revenue of a record USD 911 million, which is 62% more than in 2019: as well as reduced net loss.

Apple's changes to data privacy pose another risk to reduced targeted advertising, but Snapchat sees the solution to this problem in informing advertisers about the use of independent data as well as direct sales opportunities through their platform in which Facebook is currently their biggest competitor.

5. CONCLUSION

The aim of this research was to determine the effects of the COVID-19 crisis on expansion and change in stock prices of the five social media companies (Facebook, Twitter, Snapchat, Pinterest and Weibo).

Based on the research results, it can be concluded that the impact of the COVID-19 crisis was not the same on the growth of the stock price of all five observed social media companies. In the year of the crisis, Snapchat achieved the largest price increase per share, while Facebook had almost 5 times a higher value of shares compared to other five companies. Pinterest and Twitter achieved an increase in the share price, despite occasional declines due to the negative impact of political developments. The negative effects of the crisis are most visible in the Weibo social media, which is only social media company that recorded a drop in price per share.

These data suggest that changes in stock prices in the coming periods will not continue the same trend, as the effects of the crisis subside and life returns to normal. It is certain that social media will continue to be used more actively and frequently to perform everyday life activities, which will continue to have an impact on the actions of these companies.

Some of very popular social media are not yet listed on the stock exchange (eg Reddit and TikTok), which is the biggest limitation of this research. In addition, the social media Instagram is an integral part of Facebook, so it is possible to follow it only through the stock prices of Facebook.

In the following research, the authors will deal with a more detailed analysis of investments, strategic decisions of companies, as well as the impact of antitrust policy on the business of social media companies individually.

REFERENCES

- [1] J. Gajić, *Advertajzing*, Beograd: Univerzitet Singidunum, 2019.
- [2] A. Samur, "Hootsuite," 22 November 2018. [Online]. Available: <https://blog.hootsuite.com/history-social-media/>.
- [3] H. Susanto, F. Mohiddin, A. A. R. Setiawan, Y. F. Leu, K. P. Haghi and D. Setiana, "Revealing Social Media Phenomenon in Time of COVID-19 Pandemic for Boosting Start-Up Businessmen through Digital Ecosystem," *Applied system innovation*, no. 1, 2021.
- [4] C. A. Cuello-Garcia, G. Perez-Gaxiola and L. v. Amelvoort, "Social Media can have an impact on how we manage and investigate the COVID-19 pandemic," *Journal of Clinical Epidemiology*, 2020.
- [5] D. Valle-Cruz, V. Fernandez-Cortez, A. López-Chau and R. Sandoval-Almazán, "Does Twitter Affect Stock Market Decisions? Financial Sentiment Analysis During Pandemics: A Comparative Study of the H1N1 and the COVID-19 Periods," *Cognitive Computation*, 2021.
- [6] T. Laing, "The economic impact of the Coronavirus 2019 (Covid-2019): Implications for the mining industry," *The Extractive Industries and Society*, vol. 7, no. 2, pp. 580-582, 2020.
- [7] S. R. Baker, N. Bloom, S. J. Davis, K. Kost, M. Sammon and T. Viratyosin, "The Unprecedented Stock Market Reaction to COVID-19," *The Review of Asset Pricing Studies*, vol. 10, no. 4, p. 742-758, 2020.



- [8] A. Ammy-Driss and M. Garcin, "Efficiency of the financial markets during the COVID-19 crisis: time-varying parameters of fractional stable dynamics," 2021. [Online]. Available: <http://128.84.4.18/pdf/2007.10727>.
- [9] G. Ranco, D. Aleksovski, G. Caldarelli, M. Grcar and I. Mozetic, "The Effects of Twitter Sentiment on Stock Price Returns," *PloS ONE*, vol. 10, no. 9, 2015.
- [10] T. O. Sprenger, P. G. Sandner, A. Tumasjan and I. M. Welpe, "News or Noise? Using Twitter to Identify and Understand Company-specific News Flow," *Journal of Business Finance & Accounting*, vol. 41, no. 7-8, pp. 791-830, 2014.
- [11] M. Siikanen, K. Baltakys, J. Kannianen, R. Vatrapi, R. Mukkamala and A. Hussain, "Facebook Drives Behavior of Passive Households in Stock Markets," *Finance Research Letters*, 2018.
- [12] W. Yang, D. Lin and Z. Yi, "Impacts of the mass media effect on investor sentiment," *Finance Research Letters*, vol. 22, pp. 1-4, 2017.
- [13] P. K. Ozili and T. G. Arun, "Spillover of COVID-19: Impact on the Global Economy," *MPRA Paper*, 2020.
- [14] H. Tankovska, "Statista," 28 January 2021. [Online]. Available: <https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/>. [Accessed February 2021].
- [15] U. S. S. a. E. Commission, "Twitter, Inc.," 31 December 2020. [Online]. Available: <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001418091/6074f5a7-baba-42c7-8f28-31accf8f3e8e.pdf>. [Accessed 2021].
- [16] U. S. S. a. E. Commission, "Snap INC Form 10-K," 31 December 2021. [Online]. Available: <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001564408/799dba00-c613-4d87-b858-916aff0d832a.pdf>. [Accessed March 2021].
- [17] U. S. S. a. E. Commission, "Facebook, Inc.," 31 December 2020. [Online]. Available: <http://d18rn0p25nwr6d.cloudfront.net/CIK-0001326801/4dd7fa7f-1a51-4ed9-b9df-7f42cc3321eb.pdf>. [Accessed 2021].

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