

Name: **ZEAITER Zaynab**

University: IAE Lille (FRANCE)

Position: PhD student

E-mail : zeaiterzaynab@yahoo.com

Tel : +33 7 80 83 45 62

Big pharma's electronic word of mouth during Covid-19

Abstract

Big pharmaceutical companies have always faced unfavorable word of mouth (WOM) accusing them of unethical and illegal practices. The aim of this research is to identify the source of eWOM (electronic word of mouth) and highlight the type of argument toward Big Pharma (big pharmaceutical companies) during the COVID-19 period, when people were mostly engaged in digital activities. We collected 1,442,609 tweets containing the term "big pharma" from 2020-02-26 to 2022-10-28 and used Natural Language Processing (NLP) methods combined with qualitative analysis to classify tweets and further understand them, as well as identify the users who tweet against pharmaceutical companies.

Results: Our findings reveal a prevalence of negative eWOM on Twitter against Big Pharma, accusing the companies of unethical marketing, huge profit, and political connections, as well as the involvement of major influencers, driving people to refuse vaccines during the covid19 pandemic.

Keywords: electronic word of mouth (eWOM), big pharama, persuasion, credibility, social media influencers.

Introduction and Objectives

Twitter is a very popular microblogging platform, it is used for ‘daily chatter’ and conversations, and as a source for sharing information and reporting news (Java *et al.*, 2007).

Metrics of Twitter’s success and activity include account activity, follower engagement, account engagement with the network, and message content (Soboleva, 2018). Twitter influencers like celebrities and politicians help the main message become viral (Kamiński, Szymańska and Nowak, 2021). For example, following Donald Trump's tweets on March 21, 2020, Google searches and purchases of drug substitutes like Hydroxychloroquine have multiplied (Niburski, 2020). During the COVID-19 pandemic, hearsay, conspiracy theories and celebrity influencers have been instrumental in promoting off-label drugs (Hua *et al.*, 2022). The conspiracy theory highlights the manufacture of vaccines by "Big Pharma" tend to increase sales revenue (Bonnievie *et al.*, 2020). Big Pharma is the term used to refer to the largest pharmaceutical companies, including Pfizer, AstraZeneca, Abbott and Sanofi, which are publicly traded and have a significant influence on the global pharmaceutical market. Unfortunately, fake news and inaccurate information spread faster and wider than accurate information (Vosoughi, Roy and Aral, 2018). Such as rumors that Covid-19 is just a hoax to sell vaccines are spreading faster than scientific information about the coronavirus on social media. Some people distrust big pharma because they think that their main goal is profit and not patient health (Jamieson, 2021). Over the years, Big Pharma has paid billions of dollars in criminal and civilian settlements for marketing fraud that has cost taxpayers billions of dollars and left others with debilitating illnesses. Desperate to keep their profit margins high, big pharma increasingly engage in illegal activities, such as the dangerous and illegal promotion of drugs for purposes not approved by the Food and Drug Administration - a practice commonly referred to as "off-label promotion". (*Big Pharma's Marketing Machine*, 2016)

Companies use social media to know customers better, respond to inquiries and spread news about promotions and services. At the same time, they face danger from false information posts. While the verification of the sources is crucial for the company, the user does not pay much attention to each source (Shehata *et al.*, 2017). Reputational risks and opportunities are regularly taken into consideration in the dissemination of information in real time and word of mouth on social networks (Rokka, Karlsson and Tienari, 2014). However, companies facing an upcoming online firestorm have to retain their composure, make the right decisions, and continue to communicate and interact (Pfeffer, Zorbach and Carley, 2014).

This research aims to highlight the prevalence of “negative electronic word of mouth” on Twitter towards big pharmaceutical companies and its impact on leading people to avoid seeking treatment for Covid-19 and to be hesitant to get vaccinated and there is strong evidence that vaccine hesitancy can reduce vaccination coverage and increase the risk of vaccine-preventable disease outbreaks (Faturohman and Kengsiswoyo, 2021).

Research Question

- 1- How does electronic word of mouth about big pharma are persuasive on social media to influence opinions and behaviors?
- 2- What are the levels of user engagement with big pharma’s eWOM, as measured by retweets?
- 3- How do users perceive the credibility of sources sharing against big pharma eWOM, and does this perception affect their engagement with the content?

- 4- Do influencers have a significant impact on the discussion and user engagement surrounding big pharma on social media?

Conceptual Framework, Literature Review and Research Model

Electronic word of mouth (E-WOM) refers to any positive or negative statement about a product or company disseminated through electronic communication channels, such as social media, blogs, and websites. Electronic word of mouth (eWOM) can positively influence purchasing decisions, as evidenced by a study that found a strong relation between positive reviews and product sales (Nurhasanah *et al.*, 2021). As, attitude towards negative eWOM impacts a person's behavior by changing their brand choices. During the COVID-19 pandemic, people have expressed fear and shared negative opinions on various issues discussed on social media (Ardyan *et al.*, 2021). The three main elements for assessing the eWOM of big pharma are message characteristics, sender characteristics, and measuring influence. Message characteristics are considered a key element to examine in eWOM research because they can significantly influence the impact of word of mouth (Le, Robinson and Dobebe, 2023). Research has shown that eWOM messages that provide strong arguments or evidence are more likely to be persuasive and can influence users' behavior on social media platforms.

Hypothesis 1: The eWOM about Big pharma effectively persuade users to become opposed to Big Pharma and their medication and vaccines.

Many studies have shown that source credibility is the sender characteristics that strongly affect the reader's behavioral intentions (Khaoula, 2021). The Information Adoption Model provides a robust framework for examining the eWOM adoption process and its implications. (Verma *et al.*, 2023). It highlights the importance of not only the quality of the argument but also the credibility of the source. When the source is deemed trustworthy by the recipient of the information, it increases the perceived 'information usefulness,' which can ultimately lead to the adoption of the information (Sussman and Siegal, 2003).

Hypothesis 2: The eWOM about big pharma often stems from credible sources, which may reinforce the persuasive influence on users, leading them to become opposed to big pharma. In addition, when social media influencers are mentioned in tweets, the electronic word-of-mouth (eWOM) is amplified, potentially reaching a broader audience beyond their current followers (Soboleva, 2018)

Hypothesis 3: Social Media Influencers (SMIs) play a significant role in the propagation and amplification of eWOM related to big pharma.

The number of retweets for a certain tweet is often seen as a quantitative measure of its popularity (Kwak *et al.*, 2010). In addition, when a tweet is shared multiple times through retweets, it gains increased visibility and can potentially influence a larger segment of the population. (Suh *et al.*, 2010). Retweets have the potential to make eWOM more personal and influential because they are shared by individuals with their own followers, thereby adding a personal touch and increasing the message's reach and influence (Kim, Sung and Kang, 2014)

Hypothesis 4: Users engage extensively in interactive exchanges with eWOM related to Big Pharma which significantly influences their attitudes and behaviors.

Method

Twitter is a powerful platform, to spread many kinds of messages, including eWOM. It has exposed big pharma to a large number of eWOM and complaints from patients, organizations and users around the world. To explore the eWOM about big pharma, a dataset of tweets was collected using the Twitter academic search API v2 with the "academictwitter" package. Using

a single keyword, "big pharma", 1,442,609 tweets were collected from February 2020 to October 2022. After filtering, cleaning and selecting the English tweets, 1,208,974 tweets have been retained (one original tweet can be shared by multiple users). Using Natural Language Processing (NLP) methods with qualitative analysis, we are able to extract the most frequent word, classify tweets into different themes and understand them further, as well as identify users who are mentioning or tweeting against Big pharma.

Findings

Characteristics of the message:

The most frequent words and themes

- The analysis of the most frequently used words in big pharma tweets provides an overview of the characteristics of eWOM messages. The words 'insulin', 'gilead', 'trump', 'repkatieporter', 'money', 'rbreich', and 'price' are among the most frequently used in big pharma tweets.

-Using the grep() function in RStudio we extracted all big pharma tweets containing the word 'insulin', such as "Insulin is overpriced and it's killing Americans. Between 1997 and 2017, Big Pharma increased the price of insulin". By analyzing and interpreting dozens of these tweets, we have concluded that the majority of discussions centered around 'insulin' are concerned with the pricing strategies of big pharma companies and their efforts to maximize profits. Similarly, when examining dozens of big pharma tweets containing the word 'Gilead,' we found that the primary focus was on the high price of Remdesivir, a drug used to treat COVID-19, and the profits generated by Gilead Sciences.

To thoroughly understand the argument of big pharma's eWOM, we were able to classify the tweets according to three main themes: "bad companies," "finance," and "politics" illustrated in a dictionary created and published on a GitHub repository. This approach allows for a systematic analysis of the data, which can provide insights into the nature and tone of the discussion surrounding big pharma's online reputation. We compiled the dictionary by analyzing frequent terms in big pharma tweets, manual analysis of dozens of these tweets, and expanding the entries with synonyms and related terms. The first theme, "bad companies", includes 277 terms that express distrust and accuse big pharma of unethical practices including "bribes", "illegal" and "unethical". The second theme "finance" reflects discussions about the financial aspects of big pharma and its medications, including 75 financial terms such as "price", "dollars" and "cost". The third theme, "politics" encompasses 53 political terms, including the names of politicians like "Biden" and "Trump," as well as references to political parties which highlight the relationship between big pharma and politics.

Applying the function dictionary (list (bad companies = c ("terms of bad companies"), finance = c ("financial terms"), and political = c ("political terms")) in Rstudio, the following themes relevant to big pharma tweets were identified: A total of 233180 tweets (or 19%) are about politics, 462906 (or 38%) are about finance, and 365734 (or 30%) are about bad companies. A tweet could be classified within multiple themes.

An example of a tweet from the "bad companies" theme is: *"Please don't take the vaccine Pfizer is a New-York based Big Pharma company. It's known for its products like Viagra. But the*

medical industry giant has had its share of scandal. This includes marketing fraud allegations and Unapproved Clinical Trials. <https://t.co/ub9G9OOdi6>". This tweet linked to the website lists lawsuits and settlements related to most of Pfizer's popular drugs and advises consumers not to get vaccinated (*COVID-19 Vaccine*, 2023). "*Coronavirus: The more we know about the big pharma in the race for a vaccine the more the public distrust.* <https://t.co/scorwEkteT> via @Labourheartland" is a second tweet that highlights public mistrust of big pharma. This tweet offered a link to news articles detailing allegations of marketing fraud and unapproved clinical trials, which caused people to doubt big pharma and refuse vaccinations (*Labour Heartlands*, 2020).

The theme of finance attracted a lot of tweets, for example "*Six Drugs Whose Dangerous Risks Were Buried So Big Pharma Could Make Money* <https://t.co/Xjdm9tSKFc>", the link in this tweet implies that big pharma's purpose is to make a profit before safety is proven (*Truthout*, 2014). For the political theme, people have mentioned US Presidents in many tweets highlighting the involvement and relationship between big pharma and politicians, such as this tweet: "*This is our government being bought by Big Pharma @realDonaldTrump* <https://t.co/c8us6AnMW7>". or a tweet "*I'm so horrified by Biden and other dems engaging in a campaign of lies against #Medicare4All - can only think they must either have a lot of stock in Big Pharma, Insurance / Med-related companies - or are otherwise being rewarded / paid off to lobby for them. #NeverBiden* <https://t.co/wfAZODBESM>".

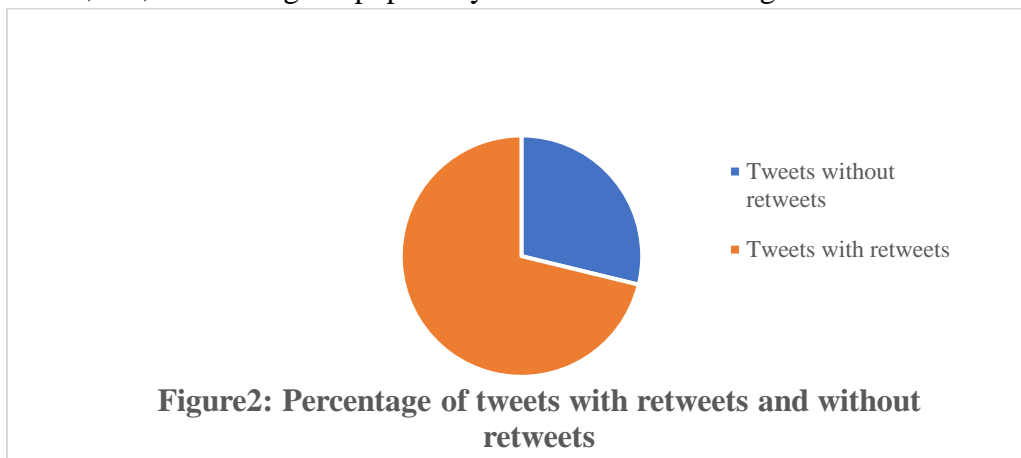
The analysis of tweets and the classification of a thematic dictionary indeed reveals the presence of significant negative (eWOM) towards big pharma, which is enhanced by strong arguments. *Characteristics of the sender (source of WOM)*

It's crucial to understand who tweets, manages eWOM, and is mentioned in big pharma tweets. The more trustworthy the source of the message is viewed as being, the more valuable the message is thought to be. For this reason, we gather all users who have tweeted or have been mentioned in "big pharma tweets" and begin to identify these users. A total of 558,476 registered users posted at least one tweet about Big Pharma. The number of followers an individual has on Twitter is a key indicator of their digital influence, as those with a larger number of followers are typically considered to have greater influence online. The analysis of users who tweeted about Big Pharma revealed a list of prominent figures and organizations considered credible sources, including President Biden, The White House, The Economist, Reuters, The New Yorker, The Wall Street Journal, ABC News, Bernie Sanders, CGTN, The Times of India, The Guardian, and several others. In addition, T.co (Twitter's official linking service), which serves in protecting users and ensure source credibility, is included in 15% of big pharma tweets. As Twitter explains on the very sparse t.co homepage, "Twitter uses the t.co domain as part of a service to protect users from harmful activity, to provide value for the developer ecosystem and as a quality signal for surfacing relevant, interesting Tweets". Moreover, the inclusion of links in tweets about Big Pharma to Facebook posts, Instagram pictures, and YouTube videos enhance the perceived credibility of the sources by providing additional content and visual elements that supplement the information shared on Twitter.

Among the top influencers mentioned in big pharma are "Barack Obama," "Rihanna," "Lady Gaga," and "Kim Kardashian". The influencers play a significant role in the field of health, either to protect people so that influencers can be used to maximize the spread of health communications, and harmful speech can be minimized (Al-Rawi *et al.*, 2021) or to promote big pharma drugs, and so they got involved in an intense debate where these influencers positioned themselves as representatives of big pharma working against patients.

MEASURING INFLUENCE

Retweet criterion: Retweets (RT) are the number of times a tweet has been posted by other users, and they are considered one of the strongest indications of eWOM on Twitter (Alboqami *et al.*, 2015). More than 70% of tweets about big pharma got at least one retweet, and 27% got more than 1,000, confirming the popularity of these tweets during COVID19.



With a total of 75.5k retweets, the tweet with the most retweets was: *“Big Pharma says they need to charge astronomical prices to pay for research and development. Yet, the amount they spend on manipulating the market to enrich shareholders completely eclipses what's spent on R&D. Today, I confronted a CEO about the industry's lies, with visuals”*. It was published by American politician Katherine Moore Porter, who brought attention to big pharma's obscene profits. A total of 51,283 users posted ‘Public Citizen's second viral tweet’ on October 2020, which said: *“BREAKING: Gilead is charging \$3,000+ for its COVID drug, remdesivir. Taxpayers spent \$70,000,000 to develop this drug. It should be in the public domain. Instead, Big Pharma is robbing us blind. We must shame @GileadSciences into changing course. Please share this”*. Public Citizen is a nonprofit organization that has stood up to corporate power and held the government accountable for 50 years. This tweet talks about the high price of Remdesivir (treatment used against covid19) which is manufactured by big pharma “Gilead”. The content of the most retweeted tweets reveals that users are interested in and engaged with issues related to big pharma, such as the cost of drugs and the relationship between Big Pharma and the government. These tweets, which often criticize the Big pharma for their unethical practices and profits, lead people to distrust Big Pharma and their innovations.

Discussion

Literature has always criticized big pharma of unethical promotional tactics, payments to physicians, off-label advertising, pharmaceuticalization, celebrity endorsements, and other unethical methods (Davari et al., 1970 ; Al-Areefi *et al.*, 2017; Sasirekha, 2018; *The Guardian*, 2006). In the world of digital media, big pharma are also facing criticism from users on various social media platforms. During Covid19, big pharma tweets were posted by users from different countries, with varying situations and political orientations, some of the users are associated with science and research and are considered as credible sources. Major social media influencers were named in big pharma tweets and blamed by individuals who claimed they were big pharma workers. Some of these influencers advise people to defend themselves against COVID-19. Major social media influencers also appeared in big pharma tweets, some of them advise people to defend themselves against COVID-19, while others were blamed by users who claimed they were workers in drug companies. Big companies have tried to engage celebrities as emotional appeals drivers. Kim Kardashian's endorsement of Diclegis, a medicine used to treat morning sickness, is an excellent example of potential comments associated with celebrities collaborating with pharmaceutical corporations (*The Washington Post*, 2015). Users blame big pharma using a variety of themes; The first theme focuses on their unethical advertising methods, demonstrating the lack of confidence in them and outlining the causes of this mistrust. The second theme discusses the relationship between big pharma and financial struggles. Users commented on medicine costs and stressed conflicts of interest and corruption in the political system, public health organizations, medical professions, including doctor bribery, and the research sector. The third discusses how significant drug companies interact with American politicians, political parties, and electoral processes. Furthermore, more than 70% of big pharma tweets were retweeted, revealing the prevalence of negative WOM on social media.

The results can be considered as preliminary evidence to validate the four hypotheses tested in this research. However, to well confirm and validate these hypotheses, particularly regarding their influence on attitudes, more in-depth analysis is needed. This could involve further qualitative content analysis of the tweets, surveys or interviews with users to understand their perceptions and behaviors, and longitudinal studies to track changes in attitudes and behavior over time.

Conclusion

Big Pharma has long been chastised in many ways, and the consequences have been disastrous throughout COVID-19. The "negative e-WOM" has pushed pharmaceutical companies and the government to make substantial efforts to urge people to vaccinate and trust pharmaceutical products. It is time to restore their image, make efforts to acquire people's trust, and execute defensive methods to decrease negative word of mouth and handle a reputation crisis.

Limitations:

The study does not explore the impact of other social media platforms or online forums where discussions about big pharma may also take place. Additionally, the analysis of the tweets is based on both manual analysis (partially) and NLP (Natural Language Processing) machine

learning, which, while advanced, may not be 100% accurate in capturing the nuances of human language and sentiment

Further Research:

Further research is required to fully understand the persuasive influence of negative eWOM against big pharma and its impact on user attitudes and behavior. It is advisable to develop and apply advanced techniques for analysis, such as neural network analysis, to enhance the accuracy and depth of the sentiment analysis.

Managerial Implications

This research has highlighted various aspects and features of eWOM against big pharma, which have had a negative impact on public health, particularly during the COVID-19 pandemic. The results demonstrate that big pharma has a poor reputation and that these companies need to enhance their ethical marketing strategies and activities. Governments, health organizations, and associations should play a pivotal role in regulating the activities of big pharma, as well as in protecting and improving public health.

Bibliography

Al-Areefi, M.A. *et al.* (2017) 'Perceptions of Yemeni physicians about interactions with medical representatives', *Journal of Pharmaceutical Health Services Research*, 8(4), pp. 255–260.

Alboqami, H. *et al.* (2015) 'Electronic word of mouth in social media: the common characteristics of retweeted and favoured marketer-generated content posted on Twitter', *International Journal of Internet Marketing and Advertising*, 9(4), p. 338.

Al-Rawi, A. *et al.* (2021) 'Investigating Public Discourses Around Gender and COVID-19: a Social Media Analysis of Twitter Data', *Journal of Healthcare Informatics Research*, 5(3), pp. 249–269.

Arduyan, E. *et al.* (2021) 'Does customers' attitude toward negative eWOM affect their panic buying activity in purchasing products? Customers satisfaction during COVID-19 pandemic in Indonesia', *Cogent Business & Management*. Edited by A. Morteza, 8(1), p. 1952827.

Bonnevie, E. *et al.* (2020) 'Content Themes and Influential Voices Within Vaccine Opposition on Twitter, 2019', *American Journal of Public Health*, 110(S3), pp. S326–S330. Available at: <https://doi.org/10.2105/AJPH.2020.305901>.

Davari, M., Khorasani, E. and Tigabu, B.M. (1970) 'Factors Influencing Prescribing Decisions of Physicians: A Review', *Ethiopian Journal of Health Sciences*, 28(6).

Faturohman, T. and Kengsiswoyo, G.A.N. (2021) 'Factors influencing COVID-19 vaccine acceptance in Indonesia: an adoption of Technology Acceptance Model [version 2; peer review: 2 approved]'

Hua, Y. *et al.* (2022) 'Using Twitter data to understand public perceptions of approved versus off-label use for COVID-19-related medications', *Journal of the American Medical Informatics Association*, 29(10), pp. 1668–1678.

Jamieson, K.H. (2021) 'How conspiracists exploited COVID-19 science', *Nature Human Behaviour*, 5(11), pp. 1464–1465.

Java, A. *et al.* (2007) 'Why we twitter: understanding microblogging usage and communities', in *Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis. KDD07: The 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, San Jose California: ACM, pp. 56–65.

Kamiński, M., Szymańska, C. and Nowak, J.K. (2021) 'Whose Tweets on COVID-19 Gain the Most Attention: Celebrities, Political, or Scientific Authorities?', *Cyberpsychology, Behavior, and Social Networking*, 24(2), pp. 123–128.

Kickbacks, cartels and chatrooms: how unscrupulous drug firms woo the public | Health | The Guardian (2006).

Kim, E., Sung, Y. and Kang, H. (2014) 'Brand followers' retweeting behavior on Twitter: How brand relationships influence brand electronic word-of-mouth', *Computers in Human Behavior*, 37, pp. 18–25.

Kwak, H. *et al.* (2010) 'What is Twitter, a social network or a news media?', in *Proceedings of the 19th international conference on World wide web. WWW '10: The 19th International World Wide Web Conference*, Raleigh North Carolina USA: ACM, pp. 591–600.

Le, T.D., Robinson, L.J. and Dobeles, A.R. (2023) 'EWOM processing from receiver perspective: Conceptualising the relationships', *International Journal of Consumer Studies*, 47(1), pp. 434–450.

Niburski, K. and Oskar (2020) 'Impact of Trump's Promotion of Unproven COVID-19 Treatments on Social Media and Subsequent Internet Trends: Observational Study', *Journal of Medical Internet Research*, 22(11), p. e20044.

Nurhasanah *et al.* (2021) 'The Effect of E-WOM, Brand Trust, and Brand Ambassador on Purchase Decisions at Tokopedia Online Shopping Site', *IOP Conference Series: Materials Science and Engineering*, 1071(1), p. 012017.

Pfeffer, J., Zorbach, T. and Carley, K.M. (2014) 'Understanding online firestorms: Negative word-of-mouth dynamics in social media networks', *Journal of Marketing Communications*, 20(1–2), pp. 117–128.

Pfizer | Company History, Products & Lawsuits, COVID-19 Vaccine (2023).

Rokka, J., Karlsson, K. and Tienari, J. (2014) 'Balancing acts: Managing employees and reputation in social media', *Journal of Marketing Management*, 30(7–8), pp. 802–827.

Sasirekha, V. (2018) 'ETHICALLY PRACTICED UNETHICAL STRATEGIES IN PHARMA INDUSTRY - WHOM TO BE BLAMED', *International Journal of Research - GRANTHAALAYAH*, 6(2), pp. 32–45.

Selling Side Effects - Big Pharma's Marketing Machine (no date).

Shehata, M. *et al.* (2017) 'How Can a Tweet Affect The E-Reputation Of A Company?', *Journal of Internet Social Networking and Virtual Communities*, 2017, pp. 1–13.

Six Drugs Whose Dangerous Risks Were Buried So Big Pharma Could Make Money | Truthout (2014).

Soboleva, A. (2018) 'MARKETING WITH TWITTER: INVESTIGATING FACTORS THAT IMPACT ON THE EFFECTIVENESS OF TWEETS'.

Suh, B. *et al.* (2010) 'Want to be Retweeted? Large Scale Analytics on Factors Impacting Retweet in Twitter Network', in *2010 IEEE Second International Conference on Social Computing. 2010 IEEE Second International Conference on Social Computing (SocialCom)*, Minneapolis, MN, USA: IEEE, pp. 177–184.

Sussman, S.W. and Siegal, W.S. (2003) 'Informational Influence in Organizations: An Integrated Approach to Knowledge Adoption', *Information Systems Research*, 14(1), pp. 47–65. Available at: <https://doi.org/10.1287/isre.14.1.47.14767>.

The FDA just recalled Kim Kardashian's Instagram post - The Washington Post (2015). Available at: <https://www.washingtonpost.com/news/wonk/wp/2015/08/11/kim-kardashians-tweet-about-a-morning-sickness-drug-has-landed-the-company-in-trouble/>

Verma, D. *et al.* (2023) 'Understanding the impact of eWOM communication through the lens of information adoption model: A meta-analytic structural equation modeling perspective', *Computers in Human Behavior*, 143, p. 107710.

Vosoughi, S., Roy, D. and Aral, S. (2018) 'The spread of true and false news online', *Science*, 359(6380), pp. 1146–1151.

Appendix

	Word	N		Word	N
1	Pharma	818529	11	gilead	50348
2	Drug	139803	12	rbreich	49533
3	Vaccine	128869	13	health	46649
4	Covid	106197	14	Price	45871
5	People	92578	15	government	41098
6	trump	75819	16	coronavirus	40815
7	repkatieporter	70894	17	charging	40311
8	vaccines	64803	18	biden	40199
9	money	61082	19	Ceo	36124
10	company	53130	20	insulin	35695

Table 1: Most frequent words in “big pharma tweets”.

Tweet_text	User_name
<p>We pay the highest price for prescription drugs of anywhere in the world. My Inflation Reduction Act takes on Big Pharma to lower prescription drug costs for families and seniors. Congressional Republicans have said their #1 priority is to repeal it.</p>	President Biden
<p>@SpecialReports: Big Pharma wages stealth war on drug price watchdog https://t.co/NqN0GGwpCU via @CarolineHumer https://t.co/cCxaTVMXIT</p>	Reuters
<p>Big Pharma, big money, big egos and a 900-year-old university: Inside Oxfordâ€™s deal to make a Covid-19 vaccine https://t.co/WfjxfpHXNo</p>	The Wall Street Journal
<p>This video on big pharma and the opioid crisis...what do you think? Watch the full video here: https://t.co/qNrP06vb2l</p>	Russell Brand

https://t.co/fUQTGeOjk3 enormous profits by charging over \$3,000 for a drug	
It's outrageous for Big Pharma to use the pandemic as an opportunity to raise prices on life-saving medicine.	Bernie Sanders
RT @cgtnamerica: Consumers may have negative impressions about big pharma companies because of high cost and harmful side-effects of drugs.â€	CGTN
How do the drug companies get away with charging Americans the highest prices for prescription drugs on Earth? Maybe it's because there are two Big Pharma lobbyists for every member of Congress. https://t.co/LXpUBVALwQ	Bernie Sanders

Table 2: Examples of tweets posted by sources that can be considered credible

Themes	Tweets
Bad companies	<i>“Watch “How Big Pharma Bribes Doctors” on YouTube https://t.co/8wgezayuJQI”</i>
	<i>“Coronavirus: The more we know about the big pharma in the race for a vaccine the more the public distrust. https://t.co/scorwEkteT via @Labourheartland”</i>
	<i>“2014: Big Pharma Giant GlaxoSmithKline [@GSK] fined \$490M by China for bribery, what has become the biggest corruption scandal to hit a foreign firm in years https://t.co/4uhsjISAcE “paid out bribes to doctors and hospitals in order to have their products promoted.”</i>
	<i>“RT @pstoise: Covid19 has been elevated by fake media & big pharma to achieve a certain agenda... https://t.co/8K3ByDIXGW”</i>

<p>Finance</p>	<p>“@realsilverjunk1 @jellyonit @UnityRCO Here's a MAJOR reason why we don't see cures, but pills as the answer ! big pharma \$ https://t.co/JEjzC9AoyA”</p> <p>“Last week, our office released a report showing how Big Pharma’s business model prioritizes profit over innovation and lives. Instead of investing in new drugs, pharma giants often focus on acquiring companies that might otherwise force them to compete. https://t.co/FM2eP8syzp”</p> <p>“100 years ago... Policy-grade science now proves that masks are at best useless, but governments remain totalitarian. Big Pharma marketing budget was >\$50 billion per year in 2004 (Marcia Angell's book). Add billion-dollar kickback to FDA, etc. etc. https://t.co/uwrEmOi6Vb”</p>
<p>Politic</p>	<p>“The UK's National Health Service want their population healthier as that saves them money, so they give smokers e-cigarettes and open vape shops in hospitals. The US wants to keep people sick, as big Pharma pays the politicians with #bloodmoney #WeVapeWeVote @realDonaldTrump https://t.co/3Gfz9iRsG7”</p> <p>“Unaffordable migraine, diabetes, and cancer drugs affect 100 MILLION. @JoeBiden gave his love for big pharma away when he commended drug companies yesterday, "By the way, great drug companies out there. “A vote for Biden is a vote for Trump drug prices. https://t.co/MmjuGvNXIG”.</p> <p>“@realDonaldTrump Vaccines are dirty. Big Pharma is dirty. Gates and Fauci are dirty.</p>

But you're going to deploy the military to distribute vaccines?!? Over my dead f\$&@#%g body will ANYONE vaccinate me. NEVER!!! <https://t.co/e1Us1CFJ5P>"

Table 3: Examples of tweets categorized into three themes.

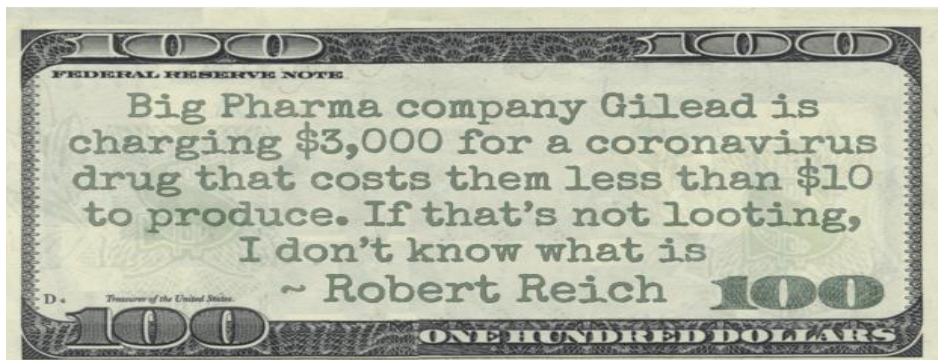


Figure 1: Quote by Robert Reich (political commentator) about Gilead's excessive profits (Robert Reich, 2020)