

Big Tech, Big Profits, and an Addiction to a Black Mirror

Big Tech, Big Profits, and an Addiction to a Black Mirror

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Abstract

This paper illuminates a plausible theory suggesting that different types of social media and social media networking companies (i.e., Instagram, Facebook, Twitter) are deliberately addicting users to their products for immense financial gain. In particular, it argues that social media companies are continuing on the path of immense financial growth and show no signs of slowing down. This paper uses relevant case studies, filings from the U.S. Securities and Exchange Commission, and graphs to emphasize the hypothesized theory.

Keywords: Social Media, Addictive Behaviors, Cost of Operations, Users, Hour Spent, Research and Development, Suicide, Depression, Anxiety.

Introduction

Starting in 2003, MySpace became popularized as it was the first recognizable social media site with over 100 million active users. MySpace was originally founded with the intent of sharing music and concert dates. However, it soon became a social media sensation as the once simple site turned complex as users were able to create profiles, post photos and videos, and add friends.

In September of 2006, the era of MySpace came to an end as Facebook opened its free website to anyone over the age of 13 to connect with friends, “like” pictures, music, videos, and articles, share their own relationship status’s, thoughts and opinions, plan events, and establish a timeline.

Fast-forward to today, Facebook has over 2.7 billion monthly active users (and counting) with a net worth of \$872.13 billion (Facebook, 2021) and is no longer the only networking site that helps us share our lives. Other sites such as Twitter and Instagram have also made it easy to

connect with family and friends on a real-time basis. However, social media can be very influential in both positive and negative ways.

In the current paper, I further explore the social media websites of Facebook, Instagram, and Twitter. I focus on the research and development of these companies and emphasize how they are profiting off of their users.

I first begin this paper with a detailed description of social media, Facebook, Instagram, and Twitter and, second, explain the addiction to social media as it exists in the world today. Third, I examine the side effects of social media as it has been proven to cause depression and anxiety based on a survey made by Kingdom's Royal Society for Public Health. This paper is concluded with a financial analysis of Facebook and Twitter, along with how they are profiting off of everyone, including you.

Literature review

Introduction to Social Media

What is it?

Social media are forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content, such as videos (Merriam-Webster, 2021). Social Media plays a crucial role in connecting people and developing relationships, not only with key influencers and journalists covering your company's sector, but also provides a great opportunity to establish customer service by gathering input, answering questions and listening to their feedback. Platforms such as Facebook, Instagram, Twitter, and others have made it possible for individuals to access information at the click of a button. About 3.5 billion people out of 7.7 billion to be exact (PewResearchCenter, 2019).

Social Media Companies

Instagram

Instagram is a free photo and video sharing app available on iPhone and Android. People can upload photos or videos to our service and share them with their followers or with a select group of friends. They can also view, comment and like posts shared by their friends on Instagram. Anyone 13 and older can create an account by registering an email address and selecting a username (Instagram, 2021). In 2010, at the age of 27, Kevin Systrom began building what today is Instagram. Within a year, 500,000 people a week were signing up for the app's photo-sharing network. (Forbes, 2012). Fast Forward 11 years, and over one billion people are currently using the app which is now worth roughly \$101 billion (Bloomberg, 2021).

Facebook

Facebook is a social networking site that makes it easy for you to connect and share with family and friends online. Originally designed for college students, Facebook was created in 2004 by Mark Zuckerberg while he was attending Harvard University. However, by 2006, anyone over the age of 13 with a valid email address could join Facebook. Today, Facebook is one of the world's largest social networks, with more than 2.7 billion users worldwide and worth over \$872.13 billion (GCFGlobal, 2021; NASDAQ, 2021). Facebook bought Instagram for \$1 billion in 2012, a shocking sum at that time for a company with 13 employees. Instagram today has over one billion users and contributes over \$20 billion to Facebook's annual revenue (CNBC, 2020).

Twitter

Twitter is a 'microblogging' system that allows you to send and receive short posts called tweets. Tweets can be up to 140 characters long and can include links to relevant websites and

resources. You can create your own tweets, or you can retweet information that has been tweeted by others. Retweeting means that information can be shared quickly and efficiently with a large number of people (UKRI, 2021). The snappy nature of tweets means that Twitter is widely used by smartphone users who don't want to read long content items on-screen. Twitter currently has 353 million users and has a market cap of \$53.48 billion.

Social Media “Addiction”

The word “addiction” brings to mind alcohol and drugs. Yet, over the past 21 years of my life, I have witnessed a new type of addiction emerge: addiction to social media. A quote from *The Social Dilemma*, “There are only two industries that call their customers “users”: illegal drugs and software,” sends shivers down my spine. “Internet addiction is known to have the same pattern as individuals with drug addiction and alcoholism which in pathology has a negative impact on the lives of individual pathology” (Kavaklı, M., & İnan, E.,2020). We've simply created a world where online connection has become primary. Especially for younger generations. And yet, in that world, anytime two people connect, it needs to be manipulated by a sneaky third person behind a screen. So, we've created an entire global generation of people who were raised within a context with the very meaning of communication, the very meaning of culture, is manipulation” (The Social Dilemma, 2021).

As we move away from having a tools-based technology environment to an addiction- and manipulation-based technology environment, the hours spent looking at the screen just continue to get longer. According to the eMarketing Organization, on average, global internet users are spending roughly 2 hours and 44 minutes on social media sites every day (2020). This statistic is strictly time spent on social media and does not include the time spent staring at the screen when using facetime, texting, taking photos, etc. Individuals from age 16 to 29 are

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spending the most time on social media platforms at 3 hours daily while the average United States aged adult was spending anywhere from 1 to 2 hours each day. In essence, this means that the average individual will spend over 6 years of their life on social media (PewResearch,2021).

In 2012, Harvard University conducted a series of experiments that involved hooking up volunteers to a magnetic resonance imaging machine (MRI) and found that regions of the brain associated with the reward center were strongly engaged when individuals talked about themselves. And when people got to share their thoughts with family or friends there was an even larger amount of energy in the reward center of the brain. In contrast, when these subjects were told that they could not talk about themselves, there was little to no activity in the reward part of the brain. This can act as evidence as to why people are constantly revealing so much personal information on social media platforms such as Facebook and Twitter and enjoy the attention of it.

These social media websites are not unaware of the harm they are doing to society as they have purposely sought out ways to make their product more addicting. Just like Tobacco companies eventually added sugar and menthol to cigarettes so you could hold the smoke in your lungs longer, Facebook added photo tagging and likes, and Instagram added stories and actionable insights to keep your fingers scrolling.

During an interview with CBSN, former Facebook executive Tim Kendall, told CBS News' that "it all boils down to the social media giant's advertising-based business model, in which the objective is to get more people to pay attention to your product and to pay attention longer each and every day" (CBS News, 2020). In summary, these advertising-based business models are combined with Artificial Intelligence (AI) technology that is constantly evolving and constantly searching for new ways to get us to look at the screen. Weather this is a notification

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for a new friend joining Facebook, or an old memory on your timeline, these algorithms have their own goals and own way of pursuing them.

There data shines light on the idea that social media usage is connected with serious mental health issues and tech giants such as Facebook, Instagram and Twitter have done nothing to address the issue or take any accountability.

Social Media Effects of Mental Health

Depression and Anxiety

Social media has a reinforcing nature. Using it activates the brain's reward center by releasing dopamine, a "feel-good chemical" linked to pleasurable activities such as sex, food, and social interaction. The platforms are designed to be addictive and are associated with anxiety, depression, and even suicide.

Depression causes feelings of sadness and/or a loss of interest in activities you once enjoyed. It can lead to a variety of emotional and physical problems and can decrease your ability to function at work and at home. Anxiety feels different depending on the person experiencing it. Feelings can range from butterflies in your stomach to a racing heart. You might feel out of control, like there's a disconnect between your mind and body (Healthline, 2018).

Based on a 1,500 persons survey ages 14 to 24 made by Kingdom's Royal Society for Public Health, the result on the negative impact of uncontrolled Instagram usage shows that Instagram is the worst social networking site which causes a decrease in the quality of sleep, bullying, FoMo (fear of missing out), low self-esteem, as well as an increase of anxiety and depression (Kavaklı, M., & İnan, E.,2020).

The anxiety and depression feelings are coming from a "compare and despair" attitude set by the unrealistic expectations of the app. Although it is natural human instinct to compare

yourself to others and constantly evaluate yourself, these applications are heightening that ability with the touch of a button to do so. Instagram’s algorithm puts the most popular posts at the top of your feed, most of which are posts by celebrities and influencers such as Kim Kardashian, Kylie Jenner, and Bella Hadid. Then you have young children and adults constantly seeing these photos and videos that were edited, filtered and morphed for hours thinking this is what a normal body should look like presenting a false representation of life.

The chart below presents the negative psychological effects that social media usage has on our mental health leading to depression and anxiety.

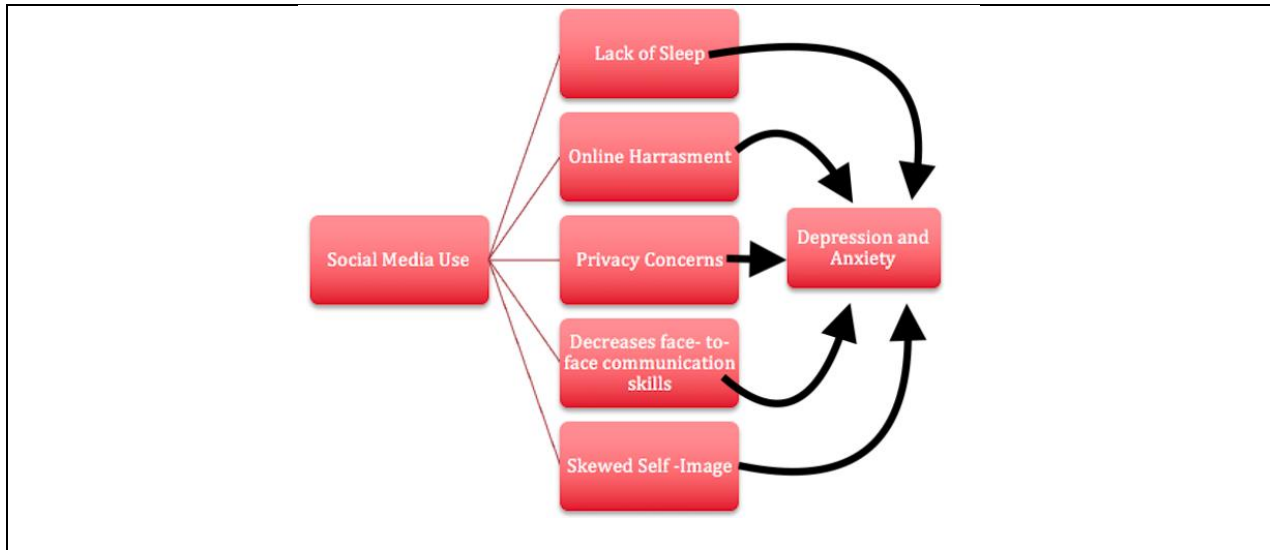


Figure 1: Negative Effects of Social Media on Your Mental Health

Eating Disorders

In 2019, Instagram had to introduce a new set of rules regarding the promotion of diet products and cosmetic surgery after a BBC news report declared that eating disorder content on Instagram was out of control after noticing children were sending graphic images of weight loss and advice on how to make eating disorders more extreme.

In an online survey conducted by the United States National Library of Medicine National Institute of Health, 680 social media users were assessed using their social media usage,

eating behaviors, and orthorexia nervosa symptoms, an eating disorder that involves an unhealthy obsession. “Orthorexia symptoms are associated with healthy lifestyle choices such as eating more fruit and vegetables, eating fewer white cereals, shopping in health food stores, exercise, and reduced alcohol consumption. But orthorexia nervosa is also associated with significant dietary restrictions, malnutrition, and social isolation” (United States National Library of Medicine National Institute of Health, 2017).

The results of this experiment directly correlated higher Instagram usage with a greater tendency toward orthorexia nervosa and unhealthy eating habits. This result can be due to the fact that #fitinspiration tagged photos on Instagram tend to show images of thin and toned bodies with objectifying elements. These findings highlight the implications that social media are causing for the psychological wellbeing of many individuals.

Financial Analysis of Social Media Companies

Facebook

As the economy contracts and many companies struggle to survive, the biggest tech companies are amassing wealth and influence in ways unseen in decades.

On May 18th, 2012, Facebook Inc. (FB) shares hit the public market trading on the Nasdaq Exchange (NASDAQ) with an initial public offering price of \$38 per share (Yahoo). Becoming a public company is the process of taking a private company public and issuing stock to investors who would like to invest in the company. The offering of stock is “the foremost important channel of new capital flow to young companies” (Gregoriou). A shareholder is a person, company, or institution that owns at least one share of a company's stock, which is known as equity. The company's most important goal is to maximize shareholder wealth which stems from dividends and price appreciation. To make these two things happen the Chief

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Executive Officer (CEO) must develop long term strategies, implement the right processes and create a plan to see what the company needs to do on a day-to-day basis. If a company follows this process to the end, it should lead to the maximization of shareholder wealth. Companies such as Facebook contribute their success to their day-to-day operations and their financial statements which show they are able to maximize shareholder wealth.

Facebook is one of the five largest publicly traded companies in America and rose 37 percent in the first seven months this year, while all the other stocks in the S&P 500 fell a combined 6 percent, according to Credit Suisse (Eavis, P., & Lohr, S., 2020). “The performance of social media stocks is not associated with macro-level sentiment, but rather with firm-level attention paid by potential investors” (Chiou, W.-J. P., Knewton, H. S., & Nofsinger, J. R., 2019). And currently, Facebook's stock is worth \$306.21 and shows no sign of slowing down.

During the first three months of 2021 Facebook's revenue rose to \$26.17 billion, a 48% increase from the end of 2020. Net income has also increased by almost 100% rising to \$9.5 billion. And basic earnings per share (EPS) increased from \$1.72 to \$3.34. Facebook's total assets, total liabilities, and total equity have also seen a consistent incline from the beginning of 2020 to today, according to the U.S. Securities and Exchange Commission (SEC).

Facebook's day-to-day success is based on their ability to effectively implement the ten strategic decision areas of operations management (OM) seen in the table below.

Table 1: Facebook's Ten Decision Areas of Operations Management

The Ten Decision Areas of Operations Management	How Facebook Achieves the Ten Decision Areas of Operations Management
1. Design of Goods and Services	<ul style="list-style-type: none">• Continuous innovation of new products and abilities.
2. Quality Management	<ul style="list-style-type: none">• Implement suitable human resource policies.

	<ul style="list-style-type: none"> • Address issues based on user experience • Collect customer feedback daily. • High quality servers. • Uses code ownership to make sure each developer is personally responsible for the quality of their own work.
3. Process and Capacity Design	<ul style="list-style-type: none"> • Online AI technologies facilitate efficient dissemination of data among work teams in the company’s facilities.
4. Location Strategy	<ul style="list-style-type: none"> • Keeps its headquarters near the best talent pools and markets such as Silicone Valley in California known for cloud computing technology. • Overseas offices are put in place for easy access to the cheap labor market.
5. Layout Design and Strategy.	<ul style="list-style-type: none"> • Employees are empowered to take control of their workspaces. • Employees are allowed to bring in artists, designers, and friends to design the office space and walk around. • Cultural artifacts are used all around the building to inspire designers. • No cabins or cubicles. • Cafes, ice-cream shops, banks, and restaurants are placed all along Facebook’s campus. • Free lunch and snacks at its offices
6. Job Design and Human Resources	<ul style="list-style-type: none"> • Facebook, uses interns, new graduates, PhD, and early-in-career hires to shape the future of the company.
7. Supply Chain Management	<ul style="list-style-type: none"> • The company’s headquarters are centered flooded with endless access to equipment supply, the labor market, energy, and top of the line environmental operational conditions.

8. Inventory Management	<ul style="list-style-type: none"> • Uses just-in time (JIT) inventory system which is a management strategy that has a company receive goods as close as possible to when they are actually needed, similar to Amazons delivery system.
9. Scheduling	<ul style="list-style-type: none"> • Flexible scheduling to ensure employees comfortability. • Four months of paid time off for new mothers and fathers • A wellness allowance to finance gym membership or other healthy activities • An extensive healthcare plan for each employee.
10. Maintenance	<ul style="list-style-type: none"> • Takes advantage of the environment around its offices to keep costs low. For example, the Sweden data center capitalizes on the country's cold climate to minimize maintenance cost of the building.

Thompson, Andrew (2022). *10 Critical Decisions of Operations Management*. 10 Critical Decisions of Operations Management | Kettering University Online. <https://online.kettering.edu/news/2016/09/21/10-critical-decisions-operations-management>.

Twitter

On November 7th, 2013, Twitter Inc. (TWTR) shares hit the public market trading on the NASDAQ with an initial public offering price of \$44.90 per share (Yahoo). For Twitter, millions of users who have been quarantined in their houses due to COVID-19 have caused a spike in the social media company's traffic and user sign up. However, due to the shutdown of many businesses, Twitter's mainstream of revenue coming from selling advertisements has seen a decline (Twitter, 2020). Despite this, Twitter still managed to pull a powerful price move to beat earning expectations in Q1 2020 ending March, delivering adjusted earnings per share (EPS) of

\$0.11 compared to a consensus estimate of \$0.10. In addition, Twitter's stock price is currently worth \$67.00 despite its ups and downs in the past year (NASDAQ, 2021). Twitter's successful day-to-day operations is also based on their ability to effectively implement the ten strategic decision areas of operations management seen in the table below.

Table 2: Twitter’s Ten Decision Areas of Operations Management

The Ten Decision Areas of Operations Management	How Twitter Achieves the Ten Decision Areas of Operations Management
1. Design of Goods and Services	<ul style="list-style-type: none"> • Continuous innovation of new products and abilities.
2. Quality Management	<ul style="list-style-type: none"> • Models its company off of creativity, empathy and global business.
3. Process and Capacity Design	<ul style="list-style-type: none"> • AI technology determine what tweet recommendations to suggest on users' timelines.
4. Location Strategy	<ul style="list-style-type: none"> • Employees work from home permanently as it increases productivity and provides a better work-life balance.
5. Layout Design and Strategy.	<ul style="list-style-type: none"> • Employees work from home permanently.
6. Job Design and Human Resources	<ul style="list-style-type: none"> • Does not target specific companies or competitors from which to hire people. • Does not conform its hiring to individuals who have certain types of degrees from a specific list of colleges and universities • Focus on specific skill sets and talents. • Ensures a positive candidate experience.
7. Supply Chain Management	<ul style="list-style-type: none"> • Cloud-based services connect everyone in the supply chain, providing a more

	strategic approach for inventory deployment and improvement.
8. Inventory Management	<ul style="list-style-type: none">• Collect their own data.
9. Scheduling	<ul style="list-style-type: none">• Working from home allows for flexible work hours.
10. Maintenance	<ul style="list-style-type: none">• Twitter's plans to work from home indefinitely cut costs for both the employees and company.

Thompson, Andrew (2022). *10 Critical Decisions of Operations Management*. 10 Critical Decisions of Operations Management | Kettering University Online. <https://online.kettering.edu/news/2016/09/21/10-critical-decisions-operations-management>.

Profiting Off Our Addiction

The primary way social media companies like Facebook and Twitter make money is through selling advertising. The concept of selling advertising while offering a free service is not new. This means that every time you log onto a social media platform, and click, look at, or like anything, AI technology collects this data which is then sold to other companies without our permission. For example, almost all of Twitter's revenue - about 85% of it - comes from advertising on its site (Tse, T. C. M., 2018). However, social media companies have jumped from selling advertising to selling our personal information. “Based on the theoretical perspective presented using CPM, four main constructs for measuring users ‘concern for information privacy on social media platforms are introduced, including 1) unauthorized access and secondary used of personal information—information access, 2) information collection—collection, and 3) erroneous storage and representation of personal information—errors” (Bennet, A. 2014).

Hypothesis

H1: Social media companies are deliberately addicting users to their products.

H2: Social media companies are continuing on the path of immense financial gain.

Methods

Subjects

Subjects include some of the roughly 3.96 billion individuals who use social media, which accounts for roughly half of the global population (Digital Marketing, 2020).

Subjects
Social Media Companies Facebook, Twitter, and Instagram
Cost of Operations Research, Development, Marketing and Sales

Measures

Variables will include the time users spent on Facebook, Instagram, and Twitter (Coombe, Curtis & Orlowski, 2021). Variables will also include the cost of Facebook, Instagram, and Twitter research and development, and marketing and sales departments, and profit from the date of the companies' founding to 2021. Data will be gathered from each company's annual report filed under the U.S. Securities and Exchange Commission (SEC).

Analysis will examine changes in the cost of operations, profit, and the time users spent on Facebook, Instagram, and Twitter. Analysis will examine whether Facebook, Instagram, and Twitter endorse, research, and create addictive behavior. Analysis will determine whether individuals are spending more time on Facebook, Instagram, and Twitter, leading to each

company’s upward profitability trend. Data will also be gathered on the number of individuals currently signed up in that year.

Table 1: Components of Study					
Data	Variables				
	Social Media Company	Suicide Rate	Time Spent by Individuals	Cost of Operations (Research and Development, and Marketing and Sales)	Annual Growth Rate
Instrument	Facebook, Instagram, and Twitter	Centers for Disease and Control Prevention	Statistica Company Data	Securities and Exchange Commission Filings	Securities and Exchange Commission Filings
Data Source	Facebook, Instagram, and Twitter	Centers for Disease and Control Prevention	Statista Database company	Securities and Exchange Commission Filings	Securities and Exchange Commission Filings
Type of data gathered	Qualitative	Quantitative	Quantitative	Quantitative	Qualitative
Types of scores produced	Company Name	Number of Deaths	Average Hours Spent	Annual Revenue	Profit

Adapted from: Rudestam, K.E. & Newton, R.R. (1992). *Surviving Your Dissertation*. Newbury Park, California: Sage Publications, Inc. page 140.

Table 2: Hypothesis, Instruments, and Statistical Analysis						
Hypothesis	Instrument					Statistical Test
	Social Media Company	Time Spent by Individuals	Cost of Operations (Research and Development, and Marketing and Sales)	Annual Growth Rate	Hypotheses Variable Relationships	
H1: Social media companies are deliberately	Social Media Company	Time Spent by Individuals	Cost of Operations	Profit	Cost => Time	Correlation; regression; line charts

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addicting users to their products.						
H2: Social media companies are continuing on the path of immense financial gain.	Social Media Company <u>Social Media Company</u>	Time spent by individuals	Cost of Operations	Profit	Cost =? Time=> Profit	Correlation; regression; line charts
Adapted from: Rudestam, K.E. & Newton, R.R. (1992). <i>Surviving Your Dissertation</i> . Newbury Park, California: Sage Publications, Inc. page 140.						

Procedure

In conducting this study, I did extensive research on these three social media companies while analyzing their financial filings under the U.S. Securities and Exchange Commission (SEC). I also found peer reviewed articles and case studies that provide evidence when showing the negative side effects of social media on mental health and the continuous increase of social media companies profitability.

Data was collected by using the following databases, *Business Source Premier* as well as *EBSCO Discovery Service*. From there I used the search terms, Facebook finances, Instagram finances, Twitter finances, U.S. Securities and Exchange Commission in their connection to addictive behaviors, suicide, depression, anxiety, and eating disorders such as orthorexia nervosa symptoms. Other sites used were The Wall Street Journal, Forbes, Fox News, ABC, CNN, Yahoo Finance and the New York Times. These articles provided knowledge on the respective company.

From the above articles and documentaries, I analyzed the addictiveness of social media and how it was continuously impacting our mental health in more than one negative ways throughout the years leading up to today. From there, I analyzed a study done by the Centers for

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Disease Control and Prevention on U.S. Suicide Rates in Pre-Teen Girls from 1999 to 2017.

Furthermore, I was able to perform a financial analyzation of the Annual Revenue of Twitter and Facebook from 2009 to 2020 and present the issue that they are continuing on a path of financial growth with few signs of slowing down. And lasty, I created a line graph that represents the number of social media users against the suicide death rate of individuals from 15-19 years of age.

Results

Continuous Profits

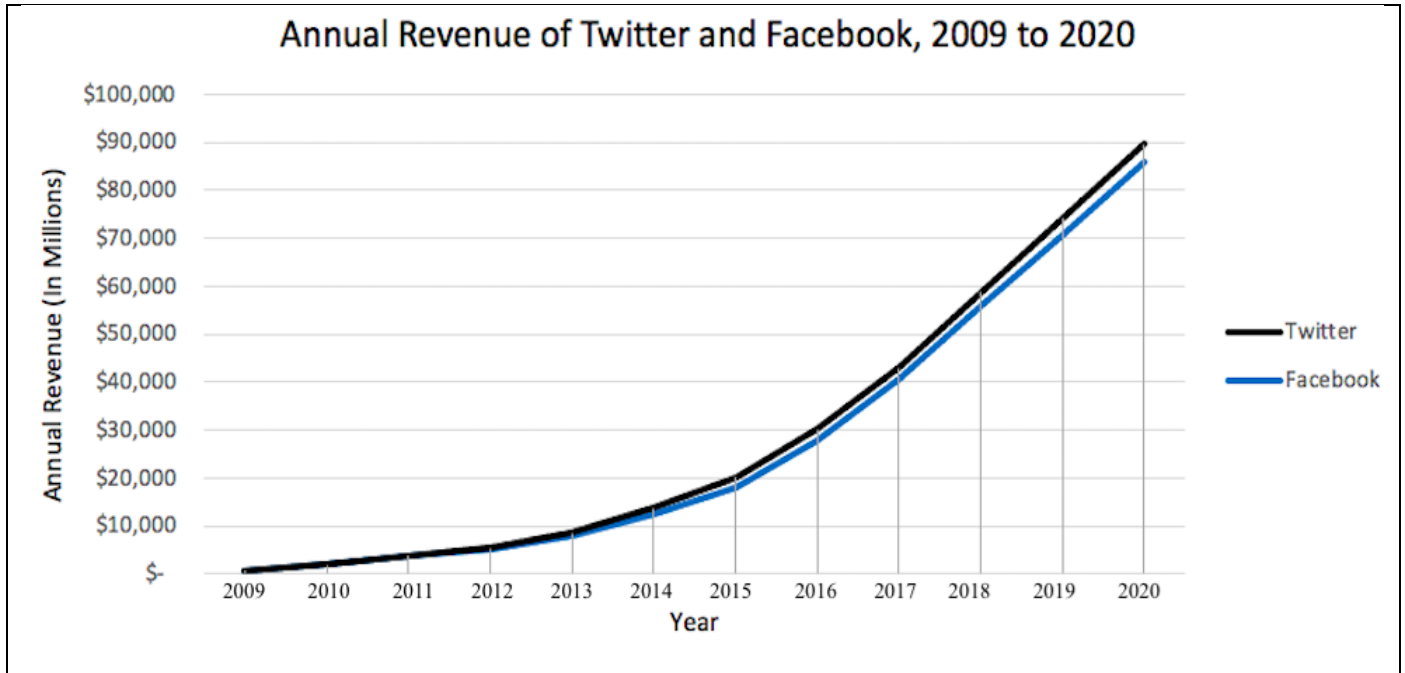


Figure 2: Annual Revenue of Twitter and Facebook, 2009 to 2020

Source: U.S. Securities and Exchange Commission

This chart presents the persistent growth of Facebook and Twitters annual revenue from 2009 to 2020.

Dying for Likes

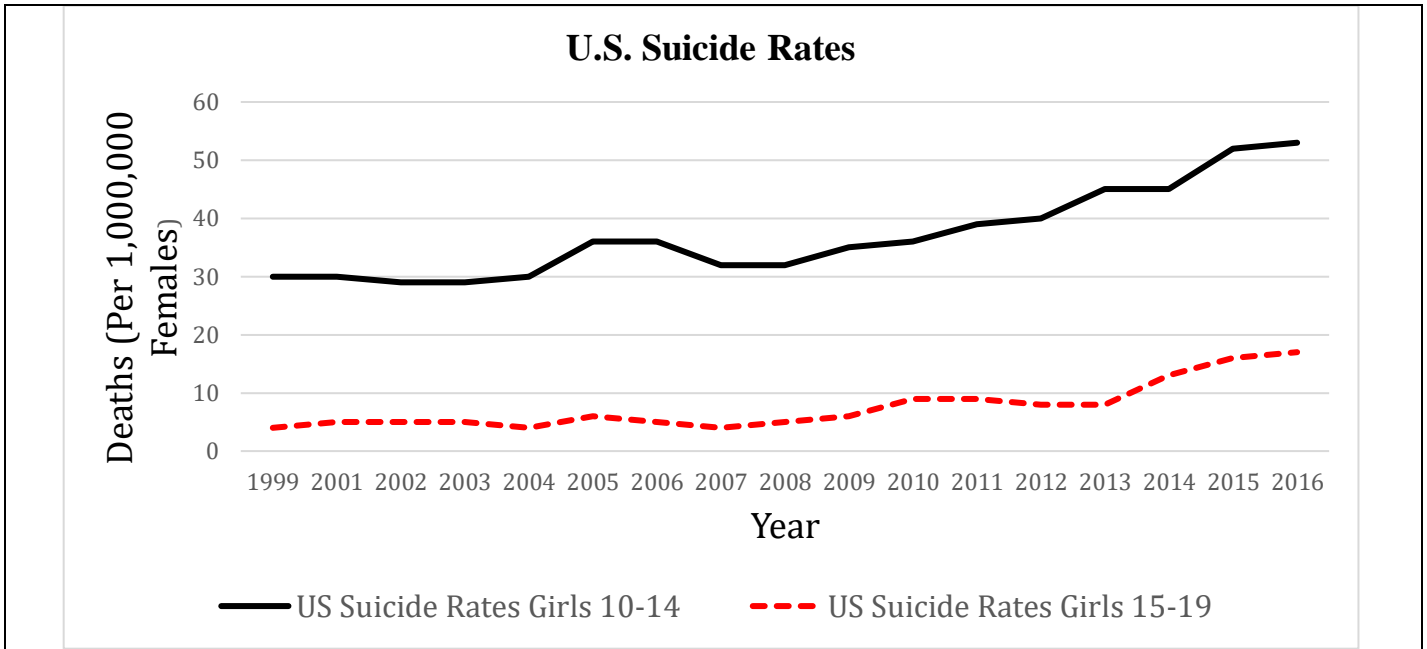


Figure 1: U.S. Suicide Rates in Pre-Teen Girls, 1999 to 2017

Source: Centers for Disease Control and Prevention

Figure 1 shows a gradual increase in the suicide rates of Pre-Teen Girls from ages 10–14 and 15-19.

Killing for Profits

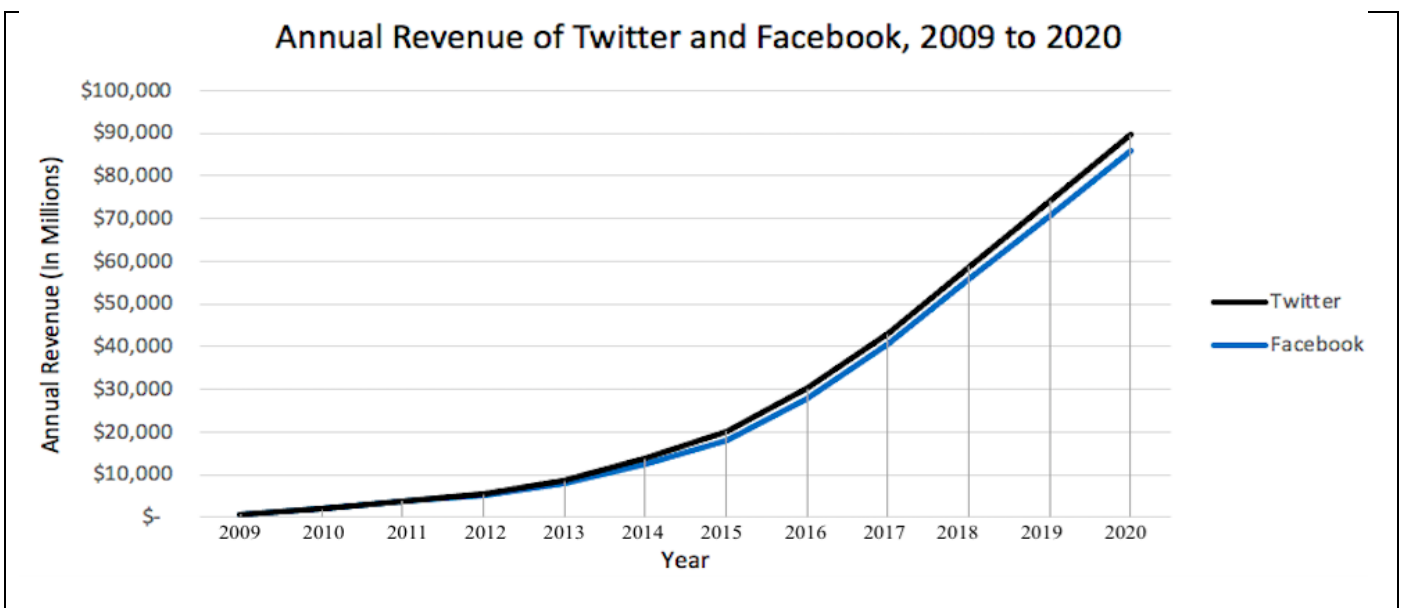


Figure 2: Annual Revenue of Twitter and Facebook, 2009 to 2020

Source: U.S. Securities and Exchange Commission

This chart presents the persistent growth of Facebook and Twitter's annual revenue from 2009 to 2020.

The Link

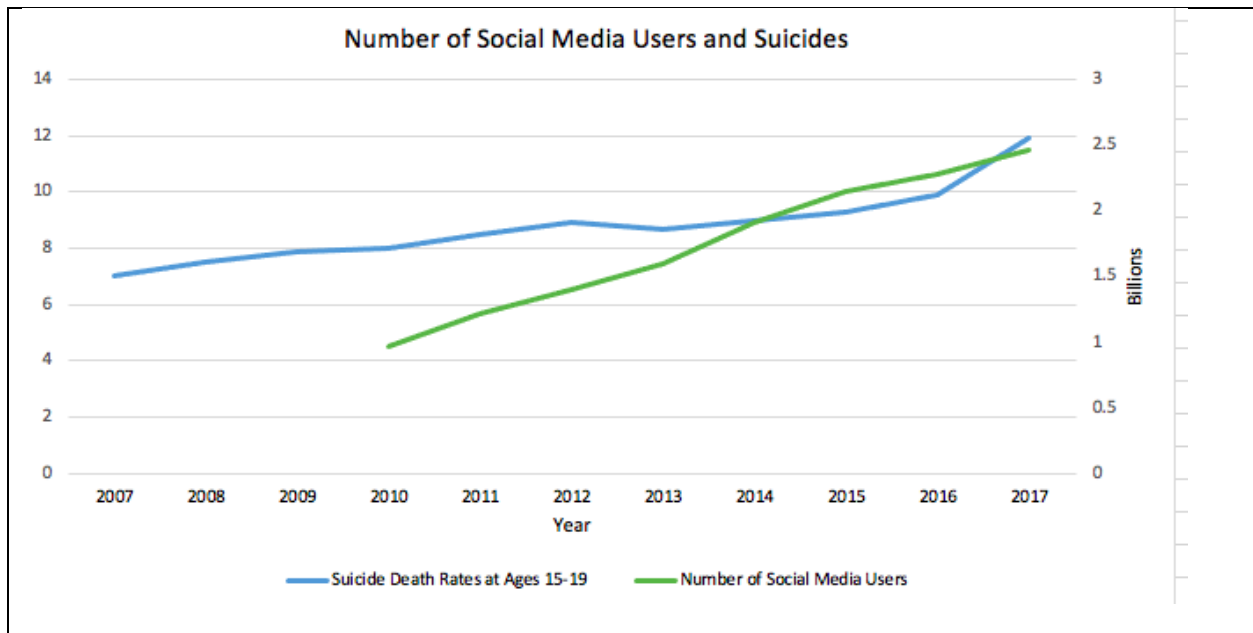


Figure 3: Number of Social Media Users on the Rise with Suicide Rates

Source: Centers for Disease and Control Prevention, 2018 and Pew Research Center, 2021.

The chart above presents the comparison in the number of social media users against the suicide death rate of individuals from 15-19 years of age.

Discussion

The results of Figure 1 indicate that suicide rates have soared over 150% in the United States in Pre-Teen Girls from 1999 to 2017. The largest spike in this data can be seen after the

year 2009 when social media was available on all devices. In 2008, the suicide rate of preteen girls from 15-19 was 32 individuals and 5 for preteen girls ages 10-14. These numbers are heavily increased and some almost doubled as 2016 saw rates of 53 (Ages 15-19) and 17 53 (Ages 10-14).

Different types of social media and social media networking companies in Figure 2 (i.e., Instagram, Facebook, Twitter) are seeing persistent growth in their annual revenue as they are thriving financially off of the social media addiction created. Facebook and Twitter have both gone from making \$1 billion in a year to roughly over \$90 billion.

The thesis results in Figure 3 also show a correlation as more and more individuals are suffering from depression leading to suicide, companies like Facebook and Twitter are thriving financially off of the addiction.

This is where I want to draw the connecting line between social media addiction, negative mental health effects, and social media companies' profits.

Conclusion

This study explained the different types of social media and social media networking companies (i.e., Instagram, Facebook, Twitter) and uncovered the success behind them as it relates to their day-to-day operations, and shareholder wealth using the ten strategic decision areas of operational management. It proposed the idea that social media usage is linked to negative mental health effects. In addition, it showed the persistent growth of Facebook and Twitter's annual revenue over time. Lastly, it discovered the link between the number of suicides in young adults and the number of users signed up for social media networking sites. Moreover, this study sheds light on the true nature of social media companies as they are deliberately addicting users to their products for financial success.

Thank you for such an amazing and challenging semester. Best, Christina.

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