

Facebook and Its Responsibility to the World

STS Prospectus

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On my honor as a University Student, I have neither given nor received unauthorized aid on this
assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Technical Capstone Details

For my technical capstone, I am working on research for a data science project involving analyzing and predicting player's behavior in a "Freemium" online multiplayer mobile game. The purpose of this research is to better understand what actions are most popular and how the developer can monetize their product optimally. I was given about 300 million raw logs that detail a user, an action, and the time in which they performed the action. I first had to develop a process for filtering the logs into sequences, which are the actions a user performs between logging in and logging out. We then collected basic statistics on the gamer's activity and have filtered down our study to the top 10% of gamers in terms of total activity across each month. Going forward, my project involves running different sequence mining algorithms to discover the most common sequences and patterns among them under various constraints. Then, I will use machine learning techniques to classify users, predict future actions, and finally make recommendations on what actions to promote so that free users transition to paid services and premium users continue to spend more.

Introduction

As computing technology has grown, the internet and computers have become an essential part of people's daily lives. According to data from the US Census, 81% of United States homes had a computer with internet access in 2016 and 76% of households had at least one smartphone.¹ Facebook is one of the internet's largest services with 1.59 billion daily active users and 2.41 billion monthly active users as of June 2019.² Facebook's massive user base gives it influence over many parts of the world. However, how the platform has chosen to run its service has led it to be at the center of many controversies related to user privacy, misinformation, and hate speech.^{3,4} This paper will examine the development of and current issues surrounding Facebook and explain how STS affects their processes.

The Growth and Culture

Facebook.com was registered in 2005 after Mark Zuckerberg had created the site as a student at Harvard University. The purpose of the website was to act as a public, online version of paper directories that gave information and pictures of all Harvard students. However, a week after launching, Zuckerberg was accused of misleading three other Harvard Students and stealing their idea of a social network for ivy league students. He had initially agreed to work on their website but then delayed communication long enough to build his own system and then exit the verbal contract.⁵ During this time, while the story was being investigated by *Crimson*, Harvard's campus newspaper, he scraped logs of failed login attempts by Journalists and hacked two of their emails to see the progress of the story.⁶ Facebook would settle the lawsuit in 2009 by granting twenty million dollars in cash and 1.25 million shares of stock. Though the details of the

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settlement are private, the Harvard student's company, ConnectU, proclaimed the settlement in a private newsletter.⁷ Facebook's beginnings illustrate its ethical shortcomings and foreshadow its future behavior.

Over the years, Facebook would continue to grow by expanding to universities and high schools across the world. It surpassed 1 million users in December 2004 and then in September 2006, would be open to all people age 13 and older with a valid email address.⁸ As Facebook grew so did its employee base rising from 150 employees in 2006 to 3200 in 2011, and over 35,000 in 2018.⁹ Working at any large company can be stressful but Facebook is routinely labeled as one of the best working places, recently being crowned as the best place to work in 2018 by Glassdoor. According to Gillett, The site uses factors like CEO popularity, compensation, benefits, culture, and values to determine rankings. Employees also cited they felt inspired by the company's mission of connecting the world and felt motivated by their coworkers.¹⁰

Most employees feel comfortable in their environment however, some executives and outsiders feel the leadership of Facebook may need to be adjusted. Whatsapp co-founder Brian Acton ended up leaving Facebook months after his app was acquired by the company. He stated "they are good businesspeople. They just represent a set of business practices, principles and ethics, and policies that I don't necessarily agree with."¹¹ Acton had felt pressure from CEO Zuckerberg and COO Sandberg to monetize the messaging app. He also felt pressure to lie to European officials on how the two apps would be integrated¹¹ Ultimately, Acton chose to leave about \$850 million worth of stock options behind and terminate his employment with Facebook. In addition

to Acton, Roger McNamee, one of Facebook's earliest investors has warned that Facebook's huge user base grants them enormous power and that Zuckerberg and Sandberg hold "the most centralized decision-making structure I have ever encountered in a large company."¹² McNamee argues 30,000 employees cannot possibly manage over 2 billion users across the world. He has written that he believes Facebook should be broken up to keep its power in check. It is easy to recognize the success of Facebook but these dissenters seem to question where they draw the line in terms of growth.

Modern Controversies

Cambridge Analytica

In March 2008, it was reported that Cambridge Analytica used data improperly obtained from Facebook's API to build voter profiles and access the information of users without their knowledge. Cambridge Analytica developed a survey that was said to be for academic use but it would secretly gain personal information of not only the user who completed the survey but all their friends as well. Cambridge Analytica then sold that information to the political campaign of Texas Senator Ted Cruz.¹³ Data included the users' current city, location check-ins, and likes, which was enough to build psychological profiles of users.¹⁴

Facebook initially apologized for the incident and said it needed to better police how people used its services. It has since implemented stricter app review process, gotten a new chief technology

officer, and reworked company priorities to shift towards strong data protection and privacy.¹² Zuckerberg was then brought in to testify in front of both Congressional Houses and cooperated in answering many questions. However, it was also revealed that Facebook had known about the data incident and use as early as 2015 but chose not to make it public. Zuckerberg claimed Facebook “took immediate action” and “demand[ed] that Kogan and each party he had shared data with delete the data.”¹⁵

This scandal led directly to a popular movement to Delete Facebook. #DeleteFacebook was trending on Twitter with over 10,000 mentions 2 hours after the story broke.¹⁶ Congress also moved forward with the CLOUD (Clarifying Lawful Overseas Use of Data) Act which could force technology companies to hand over data stored on servers regardless of whether that information was stored in the United States. This was signed into law on March 23, 2018, as part of Congress’ effort to reign in the ever-changing technology sphere. Ultimately, the company is still repairing its reputation from the incident and is working to regain user trust and ensure privacy for its users.

Fake News

Another controversy Facebook is continually struggling with is misinformation and content moderation. The company has said while it does work to reduce the distribution of inauthentic content, they do not stipulate information posted to the website must be true.¹⁷ This has led the site to be a platform for many different conspiracy theorists to spread misinformation often

dubbed “Fake News”.³ Initially, the company took a more passive approach by advising users to fact check and seek out correct information on their own. However, they received heavy criticism after the 2016 presidential election. According to CNN, about 2 months before the election it was found that more than a third of the top 200 stories about the two U.S. presidential candidates were from fake news sites during the two months before the election.³ This has led some to say that fake news played a part in deciding the winner of the election.^{18 19}

Since then, Facebook has cracked down more on accounts, partnered with fact-checking news sites like PolitiFact to investigate claims, and banned accounts that consistently spread fake news like Alex Jones, founder of InfoWars. According to Levine and Others, as Facebook advances its effort so do bad actors. Misinformation takes many different forms whether it be bots, partisan citizens, or paid humans. They are more skilled at impersonating reputable sources and creating posts that seem human than in 2016. Also, the litigation is difficult because domestic actors can obscure their fake news as mudslinging politics which have been prevalent in our nation for years.²⁰ Facebook will have to continuously dedicate resources to fighting fake news as it advances on its platform.

Rohingya Genocide

As of October 2019, the Rohingya Genocide is an ongoing crisis taking place in Myanmar where the Burmese government is committing many human rights violations against Muslim Rohingya to drive them out of the country. This has spurred a refugee crisis with most fleeing to other parts

of Southeast Asia like Bangladesh, India, and Thailand.²¹ The government has used Facebook to post thousands of messages acting as propaganda to incite violence against the Rohingya people. These messages go back as early as 2013 with examples like “We must fight them the way Hitler did the Jews” and “We need to destroy their race.”^{22 23} Facebook heavily relies on users to report inappropriate content and outsources content moderators to a consulting firm of mostly English speakers. Reuters reports in 2015, Facebook only had four employees that could speak Burmese and accurately moderate the content while Myanmar had 7.3 million active users.²²

Facebook also had trouble automatically detecting Burmese hate speech due to the way Burmese fonts are rendered on screens. Reuters interviewed former content moderators for the company who said they “sometimes had as little as a few seconds to decide if a post constituted hate speech.” According to a New York Times report, it was often military officials who had spurred campaigns of hate speech and this resulted in Facebook removing the accounts of over 20 military officials who were reaching 2.5 million unique users.^{24 25} These officials had created fake accounts of popular national figures to post anti-muslim rhetoric. By pairing hate speech along with military power, the government was able to unite citizens against the Rohingya people and murder 20,000 people as well as displace an estimated 700,000. While Facebook is not to blame for the incident, they were lackluster in their response concerning the resources they chose to dedicate to the issue. They also retain the core problem of not being able to properly moderate content in Myanmar.

STS Analysis

Facebook is at the intersection of Technology and Society naturally because of its premise and mission to “give people the power to build community and bring the world closer together”.²

From a technological standpoint, they are a massive success and have scaled to be able to serve their product to billions of users across many services with many features. They were also able to monetize their product through advertising and become a highly valued fortune 500 company.

However, like any engineer they must realize the societal impacts their work has. As their controversies presented have shown, there are many use cases for Facebook beyond connecting family members or college friends. So with their impact and value also comes a responsibility to make the site safe and reduce the instances of misuse to the best of their ability.

The problem lies with their leadership which has been shown to let these incidents happen and chosen to prioritize growth and monetization while dealing with negative consequences only when necessary. This is Facebook’s normalized deviance. Individual employees remain happy and focused on their projects and executives are happy with monetary gain and successful business. Facebook employees choose to be compliant with management and continue to work there to receive their benefits. Facebook does act to the full potential of their mission when they choose not to intervene in issues like those highlighted above. To truly serve their mission of bringing the world closer together, they must ensure connections are made safely. They are wonderful at making money and crafting technical solutions but are not achieving what they claim to be their ultimate goal. As the world’s largest social media company, they must be able to balance the technology that supports the service with managing the impact that it has.

Speaking from the Actor Network perspective, for their company to work they have to connect many types of people across roles in Technology, Economics, Business, Marketing, etc. However, these actors do not seem to be properly balanced in their contributions. Zuckerberg acts as the primary actor as Founder but does not seem to receive information well and also chooses how he disseminates information to the other actors and the outside world. He controls the structure and flow of information across the network and would be mostly to blame for the company's shortcomings. Individual entry-level employees are not able to make any changes since they are not given a spot in the network beyond their labour. As the WhatsApp acquisition demonstrates, even hires with leadership don't truly permeate the network beyond their software. Policy-making is a much smaller network and that is what creates the continuous problems and controversy around the country.

Ultimately Facebook is a technological giant whose reach affects the entire world. They are the most profitable social media company and could eventually stand to become an inevitable point of passage for large scale social networking. All other social media companies have failed to match the revenue of Facebook. Snapchat, the second-highest valued social media company, has a market cap that is over four hundred billion dollars less than Facebook.²⁶ Facebook stands to become an inevitable point of passage when it comes to social networking. Thus they would be one of the largest influencers of people on earth. That is why it is important they act to regulate themselves.

Through examining multiple incidents, it is clear that the Company has seen how its platform can be used to harm people instead of connecting them. Going forward, it is their responsibility to improve to have a service that not only works technologically but works to serve the needs of people healthily and sustainably.

Responses To Professor Gorman's Comments

- Source? Is it the same one as in footnote 6?

I added another source and went a little more in depth about the resolution of the case.

- Actor network theory might be helpful, here--who does Facebook need to keep in their network? One strategy is to become an inevitable point of passage, which is STS terminology for the equivalent of a monopoly--if you want a certain kind of service, you have to go through Facebook.

You addressed the Actor Network Theory in relation to Facebook multiple times so I decided to go more in depth and explore that topic more. I was not sure how to originally develop that section but your suggestions gave me more of a direction and allowed me to add more detail.

- Has Facebook been successful?

I created a new follow up paragraph and explained more in depth how the situation is currently being handled.

- Because they did not have enough people monitoring this situation?

I think I had already given enough background on the situation so i just extended one sentence to give my opinion.

- Here you must show that Facebook management and Facebook employees had different priorities. Another possibility is that Facebook management required employee compliance
- Exactly the point I made in the last comment--management expects employee compliance, not a trading zone with employees.

I agree and had not considered this. I'm sure Facebook management sees the employees as being a resource that will continue to be compliant in exchange for a very comfortable job and the set of positive benefits they offer.

References

1. Ryan, Camille, "Computer and Internet Use in the United States: 2016," *American Community Survey Reports*, ACS-39, U.S. Census Bureau, Washington, DC, 2017.
2. "Stats". Facebook. June 30, 2019. Retrieved October 28th, 2019.
3. Fiegerman, Seth (May 9, 2017). "Facebook's global fight against fake news". *CNN*. Retrieved October 30, 2019.
4. Confessore, Nick (April 4, 2018). "Cambridge Analytica and Facebook: The Scandal and the Fallout So Far" *New York Times*. Retrieved October 28, 2019.
5. Carlson, Nicholas (March 5, 2010). "At last — the full story of how Facebook was founded" *Business Insider*. Retrieved October 30, 2019.
6. Carlson, Nicholas (March 5, 2010). "In 2004, Mark Zuckerberg Broke Into A Facebook User's Private Email Account" *Business Insider*. Retrieved October 30, 2019.
7. Arthur, Charles (February 12, 2009). "Facebook paid up to \$65m to founder Mark Zuckerberg's ex-classmates" *The Guardian*. Retrieved December 3, 2019.

8. "Welcome to Facebook, everyone." *Facebook*. September 26, 2006. Retrieved October 28th, 2019.
9. "Facebook: From Harvard Dorm To 35,000 Employees." *Statista* Retrieved from <https://www.statista.com/chart/16054/the-number-of-full-time-facebook-employees/>
10. Gillett, Rachel (December 7, 2019). "7 reasons Facebook is the best place to work in America and no other company can compare" *Business Insider* Retrieved October 30, 2019.
11. Olson, Parmy (September 26, 2018). "Exclusive: WhatsApp Cofounder Brian Acton Gives The Inside Story On #DeleteFacebook And Why He Left \$850 Million Behind" *Business Insider* Retrieved October 29, 2019.
12. Bissell, Tom (January 29, 2019). "An Anti-Facebook Manifesto, by an Early Facebook Investor". *New York Times* Retrieved October 29, 2019.
13. Graham-Harrison, Emma; Cadwalladr, Carole (March 17, 2018). "Revealed: 50 million Facebook profiles harvested for Cambridge Analytica in major data breach". *The Guardian*. Archived from the original on March 18, 2018. Retrieved October 30, 2019.
14. Graham-Harrison, Emma | Cadwalladr, Carole | Rosenberg, Matthew (March 17, 2018). "How Trump Consultants Exploited the Facebook Data of Millions" *New York Times* Retrieved October 30, 2019.
15. Facebook: Transparency and use of consumer data. Hearings before the Committee on Energy and Commerce. House of Representatives, 115th Cong. (2018).
16. Green, Jemma (March 23, 2018). "#DeleteFacebook Highlights The Benefits Of Blockchain." *Forbes*. Retrieved October 30, 2019.
17. Scola, Nancy (May 24, 2019). "Facebook on fake Pelosi video: Being 'false' isn't enough for removal" *Politico*. Retrieved October 30, 2019.
18. Mahdawi, Arwa (n.d.). "Is 2019 the year you should finally quit Facebook?" *The Guardian*. Retrieved October 30, 2019.
19. Shahani, Aarti (November 17, 2016). "From Hate Speech To Fake News: The Content Crisis Facing Mark Zuckerberg" *NPR*. Retrieved October 30, 2019.
20. Levine, Alexandra | Scola, Nancy | Overly, Steven | (December 1, 2019). "Why the fight against disinformation, sham accounts and trolls won't be any easier in 2020" *Politico*. Retrieved December 6, 2019.

21. Pitman, Todd (October 17, 2017). "Myanmar attacks, sea voyage rob young father of everything" *Associated Press*. Retrieved October 31, 2019.
22. Stecklow, Steve (August 15, 2018). "Inside Facebook's Myanmar Operation: Hatebook" *Reuters*. Retrieved November 1, 2019.
23. Mozur, Paul (October 15, 2018). "A Genocide Incited on Facebook, With Posts From Myanmar's Military" *New York Times*. Retrieved November 1, 2019.
24. "Removing Myanmar Military Officials From Facebook". Facebook. August 28, 2018. Retrieved November 1st, 2019.
25. Dildar, Baykan (February 12, 2019). "UN Official Cites Horrific Crimes against Rohingya" *Transcend Media Service*. Retrieved November 1, 2019.
26. Kerby, Justin (May 16, 2017). "Here's How Much Facebook, Snapchat, and Other Major Social Networks Are Worth" *Social Media Today*. Retrieved December 5th, 2019.