SNAP, INC.

NYSE   SNAP

63 Market St.
Venice, CA 90291
310-399-3339
http://www.snap.com

SECTOR   Technology
INDUSTRY   Internet Software & Services
FULLTIME EMPLOYEES 1,859

PROFILE   Snap publishes an application for mobile devices that enables users to capture, view and send images and videos. Users edit and publish their own videos, and view media published by friends and content providers. Snap also markets Spectacles, glasses that capture video and enable easy upload and sharing.

ANALYSIS   Total equity value is $14.224M, or roughly $12.29 per share. When compared with the closing price of $23.83 on 27 March, 2017, our valuation estimates that Snap is overpriced by nearly 93%.

Table of Contents

Executive Summary

Snapchat was founded in late 2011 as a messaging platform that allows users to communicate using self-destructing pictures and messages. The app was an instant success with the younger generation who wanted to share photos with their peers without lasting effects and the possible oversight of older users on the network. In the past 6 years, Snapchat has grown to 158 million daily active users, and has just started to monetize. Snapchat is the least social of the social networks on the market, as its users are encouraged to share only to a select few friends. While in the past this has been Snapchat's advantage, this could potentially cause major growth issues in the future.

By valuing Snapchat at $25 billion, the market has built in certain assumptions:
1. Snapchat will continue to have high user growth.
2. Snapchat will continue to expand advertising in the app.
3. Snapchat will raise the average price that advertisers pay.
4. Snapchat will continue to keep costs of future development low.

However, Snapchat is now in a tenuous situation because many of these assumptions are simply unknowns.
1.   Snapchat's Q/Q user growth has come to a complete crawl over the last few quarters. In our analysis, we correlate this lack of growth with a general slow down in interest for the app.
2. The company seems to have fully extended the number of advertisements users receive without degrading the user experience.
3. Although advertising rates are starting to rise, it is unlikely that they will ever approach that of the per user rate on Facebook. This is because advertisers generally pay more for older users, but Snapchat's user base is very young. Also, Snap's advertisement data does not provide the comparable small niche data that Facebook provides.
4. In conjunction with these uncertainties, Facebook has taken major strides to clone Snapchat's unique features, and signs indicate that Snapchat users are becoming less engaged.

By correlating Snapchat's user growth slowdown with Facebook and Twitter's previous slow downs, we project a slower rate of growth than the market anticipates. By analyzing Snapchat's advertisement products and revenue-per-user growth potential, we estimate Snapchat's likely revenue. By reviewing Snapchat's current costs and comparing them with peers in the industry, we suggest how Snapchat could be positioned to make a profit on future growth. Finally, by using a a discounted cash flow valuation, we estimate that Snapchat is $14.2 billion, or $12.29 per share.

What is Snapchat?

Snapchat currently provides three primary features to its users. Users take a still image or video recording, a Snap, while in the Snapchat app. Users can then (1) send that Snap to other users individually or as a group, (2) post it for all of their Snapchat user friends to see, or (3) view other digital content created by Snapchat or other media Publishers.

The diagram below from Snapchat's S-1 shows how Snapchat's interface works. The left panel is for specifically sending and receiving Snaps from individual users. The right panel shows Stories, where users have posted any Snaps they wish to share with a wider audience. The rectangles at the bottom of the right panel shows a series of available digital content stories, which are created by external Publishers and are available on everyone's app.

Users receive a notification when they receive a Snap. They then often view not only that Snap but also other Snap stories and possibly other Publisher content. Snapchat currently only places advertisements on Stories and digital content posted by Publishers.
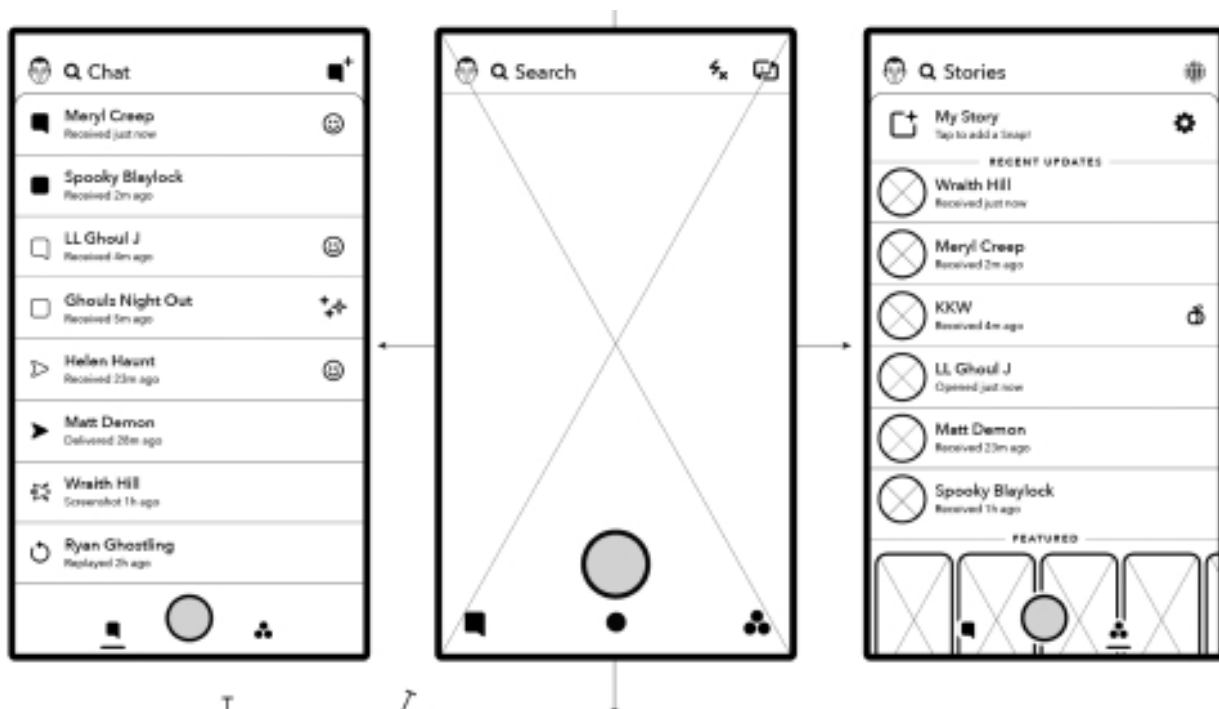
Snapchat Monetization

Snapchat has three products within its mobile app that generate advertising revenue: Sponsored Geofilters, Sponsored Lenses, and Snap Ads. A fourth revenue-generating product, a set of glasses called Spectacles, is sold separately online and in vending machines. Snapchat does not provide a breakdown for the amount of revenue generated by each product. Snapchat's advertisements differ from those of the rest of the market in that they are more creative and are of a higher quality that users love.

Sponsored Geofilters are advertisements that appear as decorative overlay options in the app when a user enters a specified geographic location, or "geofence." Any business or event wanting to advertise to Snapchat users can design its own custom Geofilter. When a user enters that business's geofence, the business's Geofilter appears as a graphic overlay that he can add to his Snapchat image. For example, Ike's, a local sandwich restaurant, could pay for a Geofilter displaying Ike's logo. Users within Ike's advertisement location could then swipe through the available Geofilters, see Ike's advertisement, and choose to add it to their Snapchat images. This advertising platform is virtually self-serve, as the business designs the filter itself and requires little involvement from Snapchat. Geofilters can be created by anyone. The cost to the advertiser is determined by the size of the location, the density of Snapchat users, and the duration of the Geofilter. Our research indicates that Snapchat also raises the price of Geofilters when the geofence contains a building that contains the world "stadium." For example, a Geofilter over Santa Clara University costs $8 an hour without the stadium included, but skyrockets to $245 an hour when the stadium (100k square feet) is included. Geofilters are a relatively small market item, and appear to be fully developed. It is unlikely that Snapchat could make any improvements to Geofilters that would increase the revenue generated by them. This means user growth is the only option for increasing revenue by this product.

Undoubtedly the most creative way for an advertiser to interact with the Snapchat audience is through Sponsored Lenses. This unique option use facial recognition technology to merge the Snapchat user's face with the business's advertisement. One recent example of this was Taco Bell's Sponsored Lens, which merged users' faces with tacos. In an advertisement campaign profiled in Snapchat's S-1, Snapchat noted that, "The Sponsored Lens was engaging, seeing an average of over 23 seconds of play time per user." Brands clearly value this interaction with their customers, as the 24-hour rate for Sponsored Lenses is reportedly near $750,000.[1] Sponsored Lenses likely have a lower margin than Sponsored Geofilters and Snap Ads though, as Snapchat must individually develop each advertisement with and for the advertisers. This group of advertisers is dominated by the traditional large brands, as well as a surprising number of recently released movies. Sponsored Lenses are a big ticket item that also appears to be fully developed. Future improvements to the product will have a minor effect on revenue, and any increase will be dependent on user growth.

---

[1] http://www.adweek.com/digital/why-advertisers-are-forking-over-big-bucks-custom-snapchat-lenses-172417/

Snapchat User Demographics	2016
13-17	23%
18-24	37%
25-34	26%
35-54	12%
55+	2%

Source: Snapchat S-1

Facebook penetration	2016	2012
18-29	88%	86%
30-49	84%	73%
50-64	72%	57%
65+	65%	35%

Source: Pew Research

Snapchat (penetration)	2016
18-24	64%
25-34	31%
35+	8%

Source: AMA

The third in-app advertising product offered by Snapchat is the Snap Ad. These high quality video advertisements mimic more traditional ads. All Snap Ads are horizontal, 10-second videos, and some include an engagement link at the bottom to take the user to another ad or in-app browser. As with other apps, users can skip the ads by clicking through them, but Snapchat boasts a higher percentage of users who watch the ads due to their shorter duration and higher quality. Snap Ads appear in Live Stories, Publisher Stories, and User Story playlists. Publishers earn a portion of the revenue when Snap Ads are displayed on Publisher Stories. Snap will pay a higher amount if the publishers book the advertisements themselves. The company paid out $10 million in publisher sharing agreements in 2015, and $58 million in 2016. In 2015, 87% of Snap Ads were sold by Snapchat itself, and 91% in 2016. Snap Ads' revenue will not only grow as the platform continues to increase the number of its users, but also as the frequency and location of advertisements increases, and as additional user control features are added. Our research shows that on Live Stories and Publisher Stories, there is one 10-second Snap Ad for every two to three 10-second stories. On User Stories, Snapchat places an ad on one out of every 15 10-second stories played. Furthermore, only one out of every 10 Snap Ads contained a "see more" link at the bottom, suggesting that actual conversions are relatively expensive on Snapchat. Thus, Snap Ads have a huge potential for growth as the product is not fully deployed.

Snapchat's latest invention, Spectacles, allows users to film content more easily than ever before. Disguised as normal glasses, Spectacles actually have a camera in the frame that enables users to frictionlessly record and upload content to the app. Instead of recording a portrait or a landscape view, however, the camera captures a circular image. The video is then cropped to a landscape or horizontal view when a Snapchat user orients his mobile device. Snap spent millions to build hype around the release of Spectacles throughout the summer of 2016. But when the glasses became available in October, 2016, they were in extremely limited quantity and only available in vending machines placed in random locations. Potential buyers either had to pay double the retail price on reseller sites such as eBay, or go on a treasure hunt to look for the rare vending machines. It wasn't until February 2017 that Snapchat began selling Spectacles online. Spectacles retail for $129, but most likely do not make a profit. Snap notes in its S-1 that Spectacles has not created a substantial amount of revenue for the

company. Instead, the company views it as an extension of the Snapchat user interface. In fact, Snapchat does not expect to achieve profitability with the Spectacles at all, noting that they expect, "production and operating costs related to Spectacles that will exceed the related revenue in the near future."
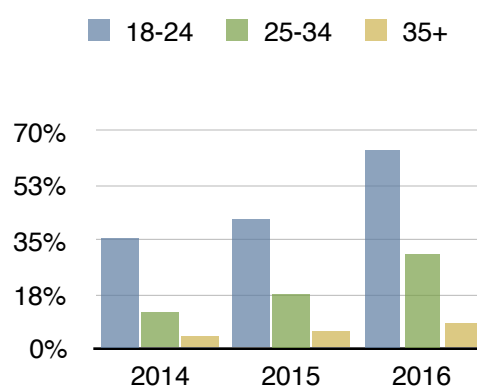
Snapchat Total Market Share

Snapchat can become profitable by continuing to deliver growth in two areas: the size of its customer base, and the frequency and types of ads available in its app. To estimate possible growth for Snapchat, we will compare Snapchat's potential to Facebook's current and historical market.

Snapchat tracks the number of its users with the daily active users metric. This measures the average number of users who open the app on a daily basis. Currently, Snapchat has roughly 158 million daily active users. Comparably, Facebook has 1.2 billion daily active users, while Twitter has an estimated 145 million daily active users. Of the 158 million daily active users, 43% of those users are located in the US, 33% are located in Europe, and 24% are located throughout the rest of the world. Facebook's geographical breakdown of users is 14% in the US, 21% in Europe, 32% in Asia, 31% in other. Interestingly, Snapchat is banned in China, a marketplace that Snapchat estimates will create the demand for 28% of the world's mobile advertisements in 2020. Not being able to compete in China is a serious growth issue for Snapchat, as the majority of the world's social media users are from China. Currently, Chinese-native apps such as Snow (an exact copy of Snapchat) dominate China's market. This may prevent Snapchat from ever getting a serious hold in the Chinese marketplace, just as Uber failed to compete with Didi Chuxing. Foreign non-European growth for Snapchat came to a dead halt in the last quarter, with its Q/Q user base not growing at all.

Snapchat's demographics are skewed to the younger generation. Snapchat notes that 23% of its users are 13-17 years old, 37% are 18-24, 26% are 25-34, 12% are 35-54, and 2% are 55 and older. Little data is public about actual Snapchat market penetration, but a 2013 Pew Research report showed similar statistics for Snapchat being skewed toward younger people. AMA conducted research on Snapchat age penetration and found that Snapchat was growing among the older crowd, but that the use of age demographics brackets skewed the results.[2] For example, its conclusion that age penetration was increasing was based on the data point that had the 35+ age group using Snapchat growing from 4.5% in 2014 to 8% in 2016. The 18-24 age penetration grew from 36% to 64% and the 25-34% grew from 12% to 31%. It is likely that most of the increase in penetration is actually due to the users getting older in the two year period, as opposed to older generations adopting it.   Comparably, 7 years after its release, Pew Research reported that Facebook's age penetration in the 18-29 market was at 86%, 30-49 at 73%, 50-64 at 57% and the 65+ at 35%. Over the next five years, Facebook increased its 18-29 market penetration by 2%, the 30-49 market by 15%, the 50-64 market by 26%, and the 65+ market by 86%. This data confirms that older generations predominantly lag on adoption, and companies like Facebook gained their participation

---

[2] https://www.ama.org/publications/eNewsletters/Marketing-News-Weekly/Pages/average-age-snapchat-users-going-up.aspx

slowly. A young audience could be a problem, as advertisers generally pay less for advertisements targeted to younger audiences compared to those that are middle-aged. In fact, the graphic to the left shows that advertisers pay roughly half for users in the age cohort between 18-24 when compared to the 45-54 age cohort. Snapchat's younger audience is likely due to the popularity of constantly taking photos and selfies and sending them around to friends. To older generations, that may be unusual behavior. In our analysis, we will model Snapchat's demographic penetration using the comparable growth of Facebook.

CPC by Age Range
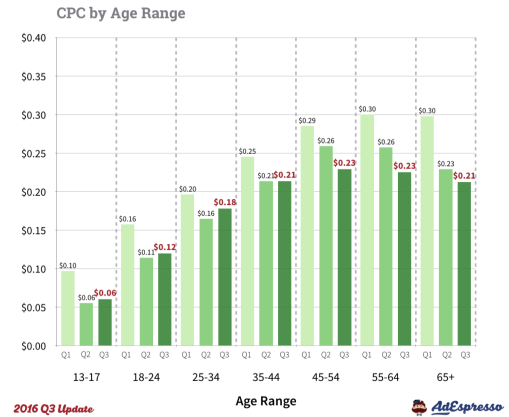
One of the reasons many investors are attracted to Snapchat is because of its massive growth. In roughly six years the company has accumulated 150 million daily active users, making it now bigger than Twitter. On a year over year basis, Snapchat is growing at rate of nearly 50%, which is impressive, and mirrors Facebook's growth in late 2011. On average, quarter over quarter, Snapchat has grown at the rate of 11%. Alarmingly though, Snapchat's user growth in the last quarter was just 3%. This was led by 0% growth in Snapchat's "other" category, which usually averages 19% q/q growth, 6% growth in Europe, where the average is usually 13%, and 5% growth in the US, where the average is usually 9%.   Unlike Facebook and Twitter, Snapchat's largest audience is still the United States. Interestingly, in the 3 years of quarterly metrics Snapchat has released for its platform, Snapchat's growth both quarter over quarter and year over year has not been linear. Comparably, with much more data, we can see that Facebook's and Twitter's user growth history has been more linear over the long run.
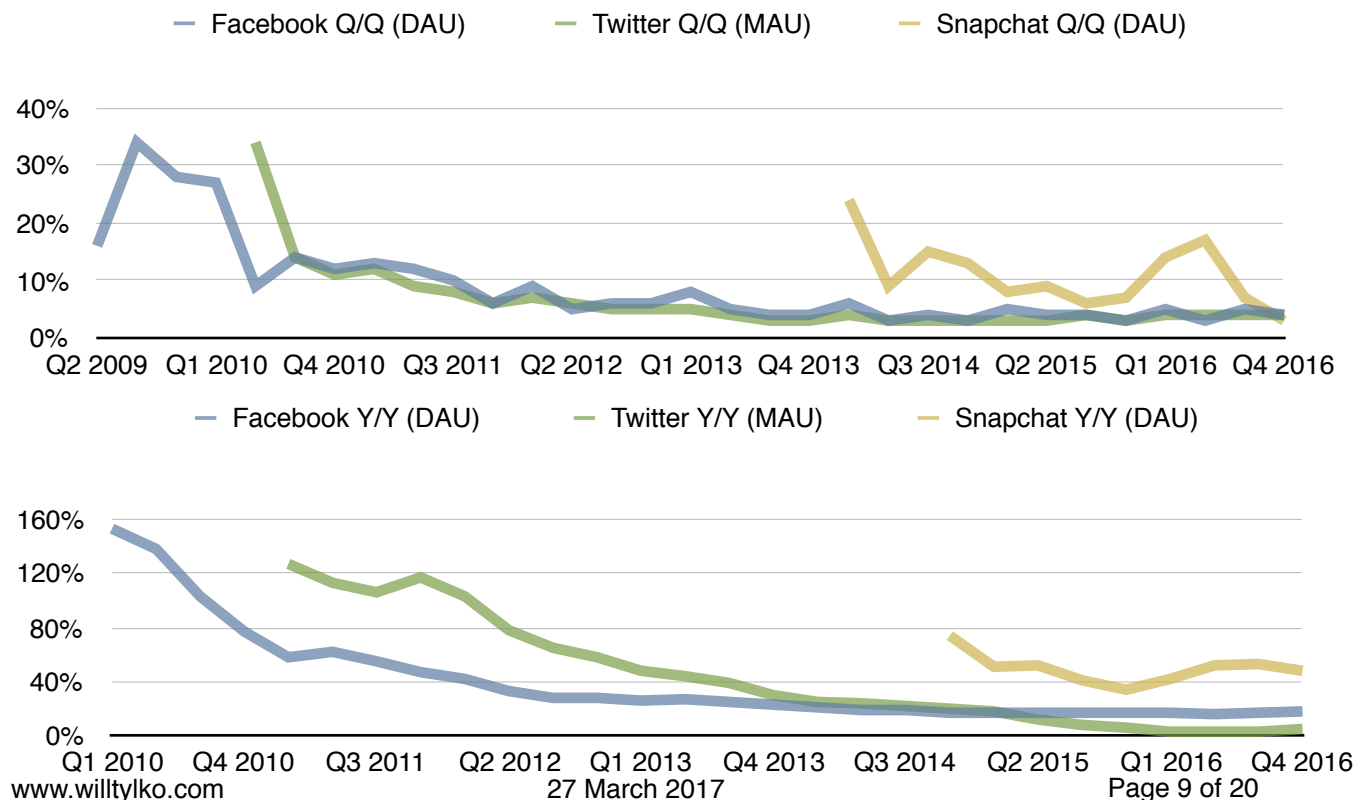
Snapchat's growth has recently slowed to an alarming level. The exact cause of this is undetermined, but certainly the lack of access to China's market and increasing competition are likely culprits. In the U.S., Facebook continues to updates its platform to offer Snapchat-like features, and their popularity is catching on. Facebook-owned Instagram recently released its own version of Snapchat's stories, which until then was unique to Snapchat. Remember, while users may send private snaps to each other on Snapchat, they only have to watch advertisements on Snapchat stories. While fewer users currently upload photos to Instagram stories than to Snapchat stories, the growth Instagram is seeing is relatively huge. Social media accounts with millions of followers are returning to posting on both platforms, although individual users seem to choose one or the other for updates. A social content producer executive recently commented to Tech Crunch that, "But across the social content production firm's stars, the CEO says there's been an average decline in Snapchat Stories views of 20 to 30 percent from August until mid-January."[3]   On March 28, 2017, Facebook announced that it would also roll out its own version of stories, again increasing Snapchat's competition. In addition, social networks have historically seen a decline of user-created and submitted content as the network ages and more people have more connections. Scrolling through a Facebook newsfeed five years ago would typically reveal status updates and photos posted by friends. Today, scrolling through Facebook will primarily yield videos shared by friends. The network has pivoted from content about your friends to random videos on the internet liked by your friends. Snapchat has attempted to do something similar with its Discover tab, but content options are more limited, and generally are filled up with lower quality news that often mimics tabloids.

Snapchat faces a double-edged sword. It has completely penetrated the younger market and would benefit greatly by expanding to the older market. But many speculate that as older users come to a platform, younger users engage with the platform less and less. "According to Gary Vaynerchuck, who agrees with Bezos, youth (in this case, teenagers), is where social networks find their audience and it grows fast. Vaynerchuck contended that there are two things that are undeniable when it comes to teens: 'It is not cool to hang out at the same club as your mom. And two, you want to lock your room.' Snapchat answered both of these problems: parents were beginning to join Facebook and teens could protect their privacy by sending temporary pictures to their friends."[4] If Snapchat begins to penetrate the older market, it will alienate its current user base. If users stop posting stories and sending Snaps, Snapchat will only have its Discover tab left. And currently, Snapchat's Discover tab is not as addictive as Facebook's newsfeed or as current as Twitter. Expansion into an older demographic only seems worrisome for Snapchat.

This is all concerning news for Snapchat. As users continue to post less, Snapchat will need to continuously create more content through its publishing network and make sure that its users are actually coming back continuously for the curated content.

---

[3] https://techcrunch.com/2017/01/30/attack-of-the-clone/

[4] http://fletcher.tufts.edu/~/media/Fletcher/MIB/pdfs/B236%20Student%20Case%20Studies/Spring%202016/Snapchat%20Case%20Study.pdf

Twitter has struggled to achieve profitability. It has failed to reach a critical size where its revenue exceeds the expense of the sales force that addresses the needs of large corporations. Furthermore, Twitter is unable to generate significant revenue from its self-service platforms when compared to Facebook and Google. Snapchat seems to be in a similar situation. The company has not achieved the critical point at which the amount it spends on advertising sales becomes smaller than the companies revenue. In addition, it has little high-margin self-service sale platforms. Because of this, profitability will only be likely if Snapchat continues to grow its user base.

In comparing the pattern of Snapchat's current user growth to the historic Facebook and Twitter user growth, it appears that Snapchat's growth has begun to mature. On a quarter over quarter basis, the company's growth is similar to Facebook Q3 of 2011. On a year over year basis, Snapchat's growth mirrors Facebook Q4 of 2011. For our analysis, we will assume that Snapchat is on a similar growth trajectory.

Revenue Per Customer

In Q4 2016, Facebook earned an average of $7 revenue for each daily active user, with the U.S. customers notably averaging $24 per daily active user. Snap Ads are unlikely to ever reach that threshold. This is because Facebook ads and Snap Ads are entirely different products, and Facebook's ads have a huge advantage. Facebook ads fall into three groups: brand awareness, transactional, and page promoting. Currently, Snap Ads are solely brand awareness ads, and the company has no plans to add transactional or page promoting advertisements. Snapchat's Evan Spiegel's concept of perfection is to prevent any outbound links on the app. This means that advertisers who want to drive traffic to their website won't be able to, costing Snapchat a huge potential market. One out of every ten advertisements has an engagement link at the bottom. This links only to another ad or an in-app web browser, and users are unlikely to convert here to a sale. Thus, Snapchat is limited only to large advertisers who can afford to buy ads just for brand awareness.

Snap Ads have several other disadvantages. First, many of Facebook's video ads have a duration of two to five minutes, while the longest Snap Ad is 10 seconds. Second, Facebook can place multiple ads on the screen at the same time, while Snapchat can only place one. Finally, Snapchat's platform does not keep track of important user demographics that enable advertisers to pinpoint the users they want to target. For example, based on a Facebook user's Likes, Facebook Ads can target people who like Star Wars. No similar demographic functionality exists on Snapchat.

For these many reasons, Snap Ads are simply inferior to Facebook ads. It is unlikely that Snap Ads will be able to generate the same amount of revenue per user without seriously degrading its user experience.

Projecting Snapchat's Growth

To become a profitable company, Snapchat will have to see large user growth, raise revenue per customer dramatically, and continue to keep costs done.

<u>User Growth</u>

User growth for all social networks appears to be similar to the 1/x function. Early on, user growth is easy, with a small number of signups resulting in large quadruple digit growth. As the number of users grows on the platform grows it becomes constantly harder to continue to grow the platform in year over year and quarter over quarter metrics. Since Facebook and Twitter have been public for a while now, we can compare their performance to Snapchat's recent performance and try to estimate where Snapchat's current growth is relative to the historic growth of Facebook and Twitter. To determine how Snapchat's growth compared to Facebook and Twitter, we looked at historic trailing four quarter average of quarter over quarter DAU metrics, and historic year over year DAU metrics. Q/Q, Snapchat's latest quarter mirrored Facebook's Quarter 3 from 2011, and Twitter's Quarter 2 from 2013. Year over Year, Snapchat's latest quarter mirrored Facebook's Quarter 2 from 2011, and Twitter's Quarter 1 from 2013. Using the average of Facebook and Twitter growth after similar historic quarters, we estimated a similar potential growth from Snapchat, on both Quarter over Quarter and Year over Year.
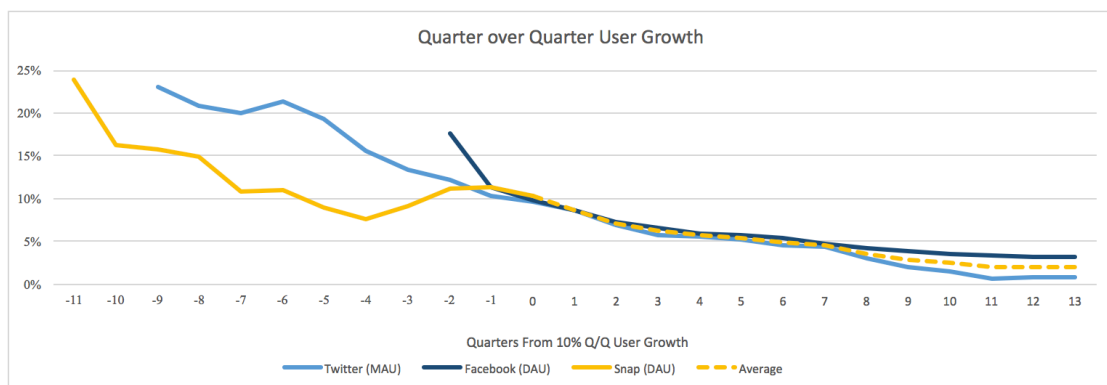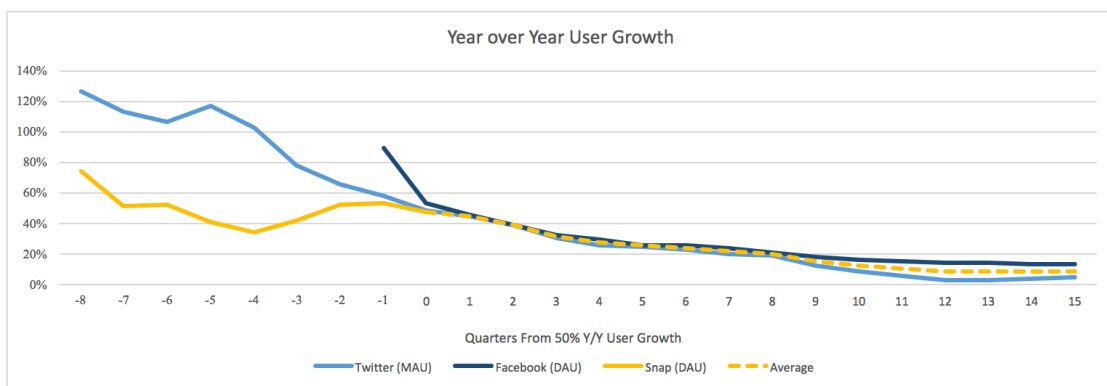
Taking the average of these results, we were able to predict Snapchat Daily Active User growth for the next several years. We expect snapchat to grow from the 158m active users it has now to approximately 278 daily active users in 2020.

Average DAU
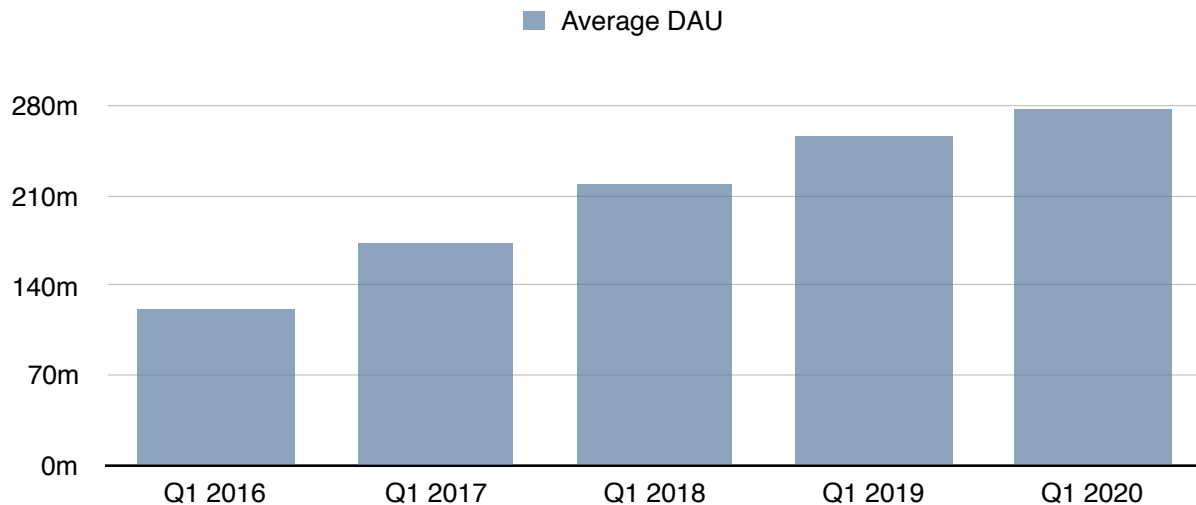
Revenue growth

Snapchat is new to the revenue producing game. In 2016, Snapchat produced $404 million of revenue, a whopping 700% increase from it's previous year revenue of $58 million. Per user, Snapchat grossed $2.71 on average, with users in the U.S. bringing in $5.82, users in Europe brining in $.74 and user in other countries $.22. This is compared to Facebook which sold $26 billion worth of ads or $23.12 per user on average. Facebook brought in $76.61 per U.S. user, $25.07 per European user, $11.96 for each Asian user and $7.05 for all other users.

2016 sales per User	Facebook DAU	Twitter MAU	Twitter DAU*	Snapchat DAU
Average	23.12	8.92	20.19	2.74
U.S.	76.61	18.03		5.82
Europe	25.07			0.74
Asai	11.96			
Other	7.05	1.12		0.22

As discussed previously, Snapchat has already incorporated advertisements into the app. Since the advertisements take up a considerable amount of space, it is unlikely that any growth in the app will come from advertisement expansion. It is more likely that as more advertisers join the platform, the cost for each ad will rise.

Snapchat's age group is also younger than that of Facebook and Twitter. Using advertising spend data collected by Adexpresso (which details what advertisers pay on average per rate per age group) and demographic data from Pew Research and AMA for both Facebook and Snapchat, we can calculate the discount Snapchat's advertisers would expect due to Snapchat's age skew.

Snap Users	U.S. Age as % of Users	U.S. Population	Total users in each Dem	Population Usage Demographics
13-17	23%	17,087,015	15,640,000	92%
18-24	37%	34,810,205	25,160,000	72%
25-34	26%	41,063,948	17,680,000	43%
35-54	12%	86,077,322	8,160,000	9%
55+	2%	76,750,713	1,360,000	2%

Using population data from the U.S. census, and an age distribution that Snapchat provides of its daily active users, we can calculate accurate population demographics. From there we can determine the weighted cost of advertisement based on age, and determine what each platform's weighted average would be considering their own age demographics. Facebook's weighted average cost per click is $0.188, while a new platform with a younger demographic such as Snapchat CPC would be $0.136. While Snapchat doesn't use the same metrics, the premium paid for older users would carry over in-between platforms. From that we can calculate that advertisers would pay roughly 28% for ads on Snapchat's network based on the age skew alone.

Age Range	Average CPC	Facebook Dem	Percent of Population	Weighted Average CPC
13-17	0.06	71%	6%	0.00
18-24	0.12	88%	11%	0.02
25-34	0.18	84%	13%	0.03
35-44	0.21	84%	13%	0.04
45-54	0.23	80%	15%	0.04
55-64	0.23	72%	12%	0.03
65+	0.21	65%	13%	0.03
WA				0.188

Age Range	Average CPC	Snapchat Dem	Percent of Population	Weighted Average CPC
13-17	0.06	91%	6%	0.01
18-24	0.12	72%	11%	0.04
25-34	0.18	43%	13%	0.05
35-44	0.21	9%	13%	0.01
45-54	0.23	9%	15%	0.01
55-64	0.23	2%	12%	0.00
65+	0.21	2%	13%	0.00
WA				0.136

Facebook's ability to charge a premium for advertisements is directly related to the vast amount of data it maintains on each user's likes, friends, friends' likes, location, work demographics, relationship status and many more items. Facebook's data is detailed enough for an advertiser to target, for example, 40-50 year old women who are single and are new home buyers. Snapchat simply doesn't have that reservoir of data. While it likely does collect significant and valuable data on location, age and followers, the data simply isn't the same in scope or quantity as that of Facebook. It is difficult to estimate exactly the discount that advertisers would expect off of Facebook's rate, but a reasonable figure would be approximately a 20% reduction. While this is an assumption backed up with no data, and certainly the weakest estimation in this paper, advertisers will absolutely pay a premium if that means getting a specific targeted customer, and Snapchat will undoubtedly be incomparable to Facebook in this metric. 20% seems like the correct amount of difference between a premium advertising product and a less premium version.

Snapchat is positioned to grow proportionally faster in the overseas markets. US sales per user as a percent of total sales is much higher for Snapchat than for Facebook, indicating that Snapchat's overseas sales distribution has not yet fully realized its potential.

Taking these two considerations into account, as well as the average of the revenues per user of Twitter and Facebook, we think Snapchat should be able generate revenue per user of $12.43. Between 2012 and 2016, Facebook increased its revenue by 300% (CAGR of 32%). Since Snap Ads are not yet completely developed, and Snapchat's advertisements themselves are new, we think Snapchat could reach $12.43 in yearly revenue per user by 2020 (CAGR of 46%).

Costs

To be profitable, Snapchat's revenue must exceed its operating related costs. Snapchat's costs are categorized as Cost of Revenue, Research and Development, Marketing and Sales, and General and Administrative. In order to understand Snapchat's future profitability, we will compare its current spending to that of Facebook and Twitter (Twitter's MAU is converted to DAU based on previous analyst estimates).

Cost of Revenue is the amount of money that Snapchat spends on its product to continuously deliver the service. Unlike Twitter and Facebook who own their own data centers, Snapchat actually rents its processing power from other web-based services. Because of that, Snapchat likely pays a variable rate for usage. This means that the cost per user will likely be flat indefinitely, if user engagement stays mostly level. Hosting its service on a different platform does have its advantages, as Snapchat spends less per user on the cost of revenue than both Facebook and Twitter (Twitter @4.21, Facebook @3.09, Snapchat @2.86).

Snapchat currently outspends its peer group on Research and Development as a percent of sales. However, it is more appropriate that Research and Development spending be tracked on a per user

basis, in which case Snapchat spends less. Twitter spent 3.23 per user on Research and Development, Facebook 4.83, and Snapchat 1.16. Facebook's higher spending in this area is due to its large research projects, such as the effort to develop drones to provide internet access to remote areas of the world. Twitter likely is spending more because its current business model is not working. Snapchat should continue to spend a small amount on research and development in order to gain an advantage over Facebook and Twitter who seemingly through money away here. Snapchat's latest product, Spectacles, could cause an increase in Research and Development spending per user, if Snapchat continues to develop the idea further.

Snapchat currently underspends on Marketing and Sales per user, likely because it hasn't been focused on obtaining revenue. Since Snapchat's advertisement strategy is more aligned with Twitter than that of Facebook, it is likely that Snapchat will spend a similar amount as a percent of sales. As a percent of revenue, Twitter spent 38% on Marketing and Sales, Facebook spent 14%, and Snapchat spent 31%.

Snapchat's G&A expense percent of sales is high, but is in line with the rest of the group at 1.05 per user.

To summarize, Snapchat will continue to spend 2.86 per user on Cost of Revenue, approximately 1.16 per user on Research and Development, a similar percent of sales (31%) as the current expense for Marketing and Sales, and a level expense of 1.05 per user on G&A. To break even, Snapchat will need to produce revenue of $7.31 per user per year.
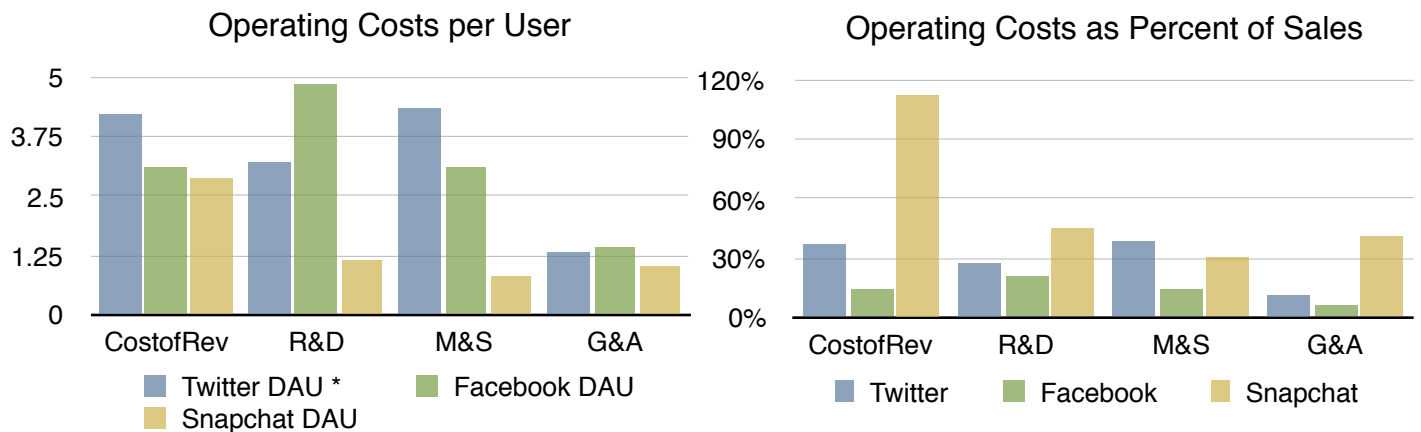
Profitability

Putting together the user growth model, the user revenue model and our operating costs model, we can create a model that has Snapchat being profitable.
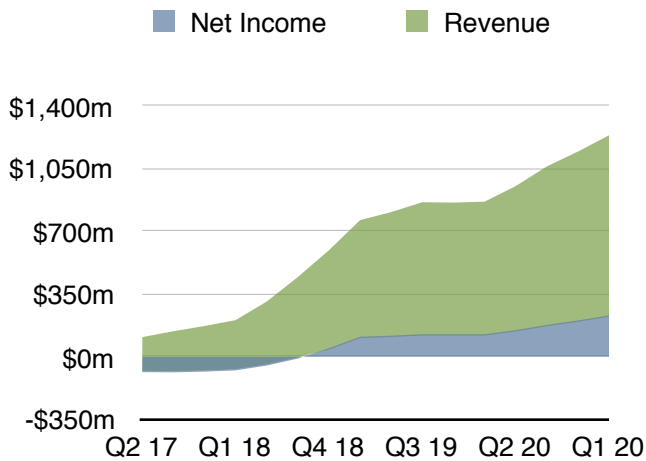
(millions)	2017	2018	2019	2020
Revenue	$ 963	$ 2,014	$ 2,906	$ 3,642
Cost of Rev	$ 557	$ 708	$ 818	$ 935
R&D	$ 234	$ 320	$ 391	$ 473
M&S	$ 299	$ 624	$ 901	$ 1,129
G&A	$ 205	$ 260	$ 300	$ 343
NI from Ops	$ (332)	$ 102	$ 496	$ 761

Weighted Cost of Capital

Snapchat has a weighted cost of capital of 7.61%. This was calculated by using a Market Risk Premium of 6%, a risk free rate of 2.42% (10 year Treasury Bond), and a beta of .8625. The beta was calculated through a comparable analysis of 23 different comparable companies suggested by Bloomberg. Notably, their cost of capital is on the low side, which can lead to a generous valuation.

Enterprise Value

Using the assumptions of our previous models, and a 3% perpetuity growth rate, we calculated a present value of Snapchat to be $14,224 million. To get Enterprise Value, net debt must be added. Snapchat had net debt of $987 million in Q4 2016, and raised an additional $2403 million in its IPO. Total net debt is -$3390M. Total Enterprise Value is thus $10,834M.

Enterprise Value of Snapchat

WACC	Long Term Growth Rate				
	2%	2.50%	3%	3.50%	4%
6.61%	11,211	12,956	15,184	18,129	22,202
7.11%	9,638	11,022	12,743	14,940	17,844
7.61%	8,349	9,470	10,834	12,530	14,695
8.11%	7,279	8,204	9,310	10,656	12,329
8.61%	6,373	7,147	8,059	9,150	10,477
9.11%	5,597	6,254	7,017	7,917	8,993
9.66%	4,865	5,419	6,056	6,797	7,668

<u>Equity Value</u>

To arrive at Equity Value, we subtract net debt from the valuation. Thus, the total equity value is $14,224M, or roughly $12.29 per share. When compared with the closing price of $23.83 on March 27th, our valuation estimates that Snapchat is overpriced by nearly 93%.

What Would Change our Valuation?

The following conditions would cause a change in our valuation of Snap, Inc.

1. User growth turns negative due to increased competition from Facebook.

2. The company decides to increase spending on making niche products, like Spectacles, which will not likely be profitable.

3. Advertisers state early dissatisfaction with the product.

4. Advertisers don't care about the quality of the data collected, meaning that Snap can generate higher revenue per user.