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Google Ads: A Strategic Audit

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Abstract

Google began as an internet search product, allowing users to find relevant sites based on a search query. Over the past several decades, Google has become an extremely large and profitable business through online digital advertisements. While Google has a diverse product mix, the overwhelming majority of its revenue is generated through ads. This strategic audit first looks at the current external environment, looking at the political, economic, social, and technological changes and opportunities relevant to the industry. Then, it looks at the current competitive environment and shows the profitability of the business because of the large barrier to entry. It analyzes Google's own strengths and weaknesses, identifies opportunities and threats, and explains Google's competitive advantage. After considering all of that, it identifies several of Google's current ventures as being potentially the most profitable moving forward. Google is and has been an innovative company, utilizing the latest technologies and being a powerhouse of a company. As long as Google continues to take risks and move fast, Google will continue being a leader in its industry.

Keywords: Google, strategic, audit, technology, innovation, internet, business

A Brief History

Google began as a project developed by two Computer Science students at Stanford in 1995 called BackRub. BackRub was intended to be a search engine that was based on an algorithm that would track and record how important a page was based on the number of links pointing to the page from other sites called PageRank. After a few demos to influential people, cash began to flow in to bring Google to life. Google became a vital part of the internet, a gateway that allowed other users to navigate the world wide web.

Google soon became incorporated and began to grow as a company. As it steadily grew for the next couple years, Google moved to the now headquarters Googleplex in Mountain View, California.

In the year 2000, Google launched AdWords as a self-service advertising platform. This would soon realize as the company's main source of revenue. AdWords allowed other companies to promote their sites as advertisements on the Google query search results on the front page based on whether the user's search query had matching keywords. In fact, within the month that Google announced the launching of the service, approximately 350 companies and advertising agencies adopted it. Clearly, it didn't stop there.

Since then, Google began expanding its suite of products and services, a few of which I will highlight. In 2005, Google introduced Google Maps, allowing users to find instructions on how to navigate to a specific destination from their location. To this day, the accuracy and reliability of the service puts Google Maps as the leading service for consumer navigation. Google Calendar was launched in 2006, allowing users to conveniently organize and manage their schedules on an intuitive user interface. In 2007, the Android operating system was launched. Since 2013, over 75% of the smartphones across the world are powered by Android, reaching nearly 90% in 2018. And in 2008, Google Chrome was launched. Since its debut, Google Chrome has been an increasingly popular browser, rising steadily and reaching over 60% of the internet browser market.

Today, Google is part of the larger conglomerate parent company Alphabet, which is composed of Google and other "Bets" in the tech sphere. However, Google is Alphabet's cash cow, and even within Google, advertising is its core source of revenue. Of its nearly \$137 billion in revenue, Google makes up about 99.6% of that. Google's advertising segment makes up 85% of that.

In this analysis, we will specifically focus on Google's advertising segment, since it is the main source of revenue and the core of Google's business. While Google has other products and services, some that do generate revenue for the company and some that don't, a majority of its pursuits directly influence its advertising segment, even if it seems disparate.

The External Environment

Before considering how Google should proceed in its advertisement endeavors, we must first consider the external environment, the pressures and the opportunities. Following that, we will consider the industry as a whole.

PEST Analysis

In the PEST analysis, we will consider four key factors – political, economic, social, and technological – and examine how this affects Google and the industry as a whole.

Political

Within the tech industry as a whole, there has been drastic changes in the pressure and the relationships between the industry with the government. Under the Obama administration, Google had a very close and amicable relationship with the Obamas. In fact, over the course of his presidency, Google has provided a lot of help with vital government projects, supplying expertise, services, and even personnel. In fact, it's speculated that this gave Google an advantage in the industry because of the amount of lobbying with the government. In addition to helping with projects, Google representatives attended a great deal of White House meetings, far greater than any other public company, on average of over once a week. Meetings include a variety of topics, included patent reform, internet censorship, STEM education, and cloud computing. This level of intimacy and symbiosis with the Obama administration undoubtedly provided benefits for Google.

However, contrasting with the Obama administration, the Trump administration is far more conservative in nature. The current administration's attitude towards technological giants forces companies like Google have to tread more carefully. Google and other tech companies such as Facebook and Amazon are also affected by the disapproval from the new administration. Previously praised for their innovation, they are currently coming under scrutiny for their hiring practices, their size, and power and influence over information.

In particular, the president has been sure to point out the size of Amazon and how the growth of the company has been hurting retailers. The FCC has recently repealed the Obama-era net neutrality law, which prevented internet service providers from throttling or blocking web traffic from specific sources. Net neutrality prevented internet service providers from giving unfair advantages to companies that paid premium amounts for faster traffic. On the contrary, Google and Facebook have been criticized for having too much control over information. They have been accused of pushing their own agendas by filtering the content that gets put at the top of search results or shows up in users' feeds.

The anti-monopolistic viewpoint and criticism of the government administration at the very least sheds Google in a negative light. On the other hand, the administration has been discussing whether or not Google's search needs to be regulated. Because Google's search algorithm is a black box, meaning it is proprietary and it's not publicly known how it works, they fear that there

may be some bias within the system that discriminates against large populations, including themselves.

The FCC has already taken a stab at tech companies. The Trump administration harbors a lot of resentment to the practices of the tech industry. While this doesn't completely shut down Google's operations and main sources of revenue, the company must tread carefully moving forward.

Economic

Like many other major companies, Google used to save its cash overseas. The major benefit of this is that in other countries, the corporate tax rate is lower than that of the United States. Prior to the new tax laws under the Trump administration, Google would have had to pay the 35% tax on its profits. By storing capital outside of the United States, Google saves money by getting to pay lower tax rates.

However, after Trump's tax cut, many companies, including Google, repatriated their foreign capital. The moving of their foreign capital was subject to a one-time tax of 15.5%, but now that the assets are in the United States, the tax is now subjected to the new tax rules, which is around 20%. This means now that the capital is here in the United States and subject to less tax, Google can more readily expend cash on investments within the United States. However, despite moving capital back to the United States, Google and other companies that repatriated their foreign capital aren't immediately investing it into assets, which is to be expected. Aside from the one-time tax, Google's net income grew by an estimated \$1.9 billion. Although the company took a \$10 billion hit to repatriate, the long-term advantages will quickly mitigate the upfront cost.

According to the International Telecommunications Union, a United Nations specialized agency, an estimated 51% of the world's population will have gained access to the internet by the end of 2018. In particular, as developing countries increase their economy, so will their connectivity to the internet. Most notably is Africa. Since 2005, Africa has had the highest growth in internet usage globally, reaching over 24% in 2018. In fact, Facebook's project "Simba" is a project to install an underwater fiberoptic cable around Africa, connecting more users to the internet and driving down bandwidth costs. This not only benefits Facebook, but other companies including Google.

While there appears to be tremendous opportunity in entering these new markets, it's unclear how beneficial this will be to Google and advertising in the short-term. However, long-term, this may prove to be extremely beneficial once these newly connected countries pass a certain threshold of economic development.

Social

In 2018, the European Union began enforcing the latest standard for privacy for consumers. The General Data Protection Regulation is a new law that sets an entirely new standard for how businesses must treat consumer data. In the era of data, there have been many concerns about protecting the privacy of consumers and ensuring that companies are not being too invasive.

Violation of this strict policy resulted in large fines for the offender. In fact, in January of 2019, Google was fined \$57 million by the French administrative regulatory body CNIL for a lack of transparency when filling a form to configure Android devices.

While this policy does put tighter restrictions on Google, it also mirrors a growing sentiment about consumers' views of privacy. There is a large growing concern for what information users might be giving up to the companies through the services or platforms that they use. And now, with the recent Cambridge Analytica scandal, people are becoming more aware how their data is being handled. It's apparent now that not only do companies track users' actions and collect their information, but the data is often shared or sold to other entities. A small minority of people are migrating to online engines like Brave and Duck Duck Go, which promise secure and private search. Yet, with the convenience that companies offer, consumers are willing to give up some privacy. This torn and troubled feeling may prevent users from using certain services like Google platforms in the future, but for now, it has not translated to a major decline in usage.

And, over the past few years, the amount of web traffic from mobile devices has steadily increased. More users are now using their phones to access the web. However, desktop and laptop computers continue to be a large portion of web traffic. This has big implications for Google, because as users transition to mobile, Google needs to make sure they stay competitive with their mobile applications and mobile traffic.

Technological

Many of the previously mentioned changes also apply to this section. As mentioned in the *Economic* section, the rapid rise in availability of internet across the world offers lots of opportunities for Google. But at the same time, the implications of serving advertisement to developing countries may not be the most profitable or ethical strategy. In addition to reach, internet all over the world is getting faster. With faster internet speeds, more content can be transferred each way, so users can get more done when surfing the web, and Google can receive more traffic or analytics and better its business. In addition, technology and the number of web-connected devices is radically increasing. Soon, we may see a jump in the number of internet-connected cars or home devices, which provides other opportunities for Google.

In the *Social* section, it's mentioned that increased amount of web traffic comes from mobile devices. As mobile phones become more powerful and better integrated, this becomes an opportunity to capitalize on.

A detriment to Google's business model, users are finding ways to block ads in their browsers. By using browser extensions, the client computer or mobile phone can prevent outgoing requests to Google's ad APIs. This will be discussed more in the SWOT analysis.

Porter's Five Forces

The Porter's Five Forces analysis is a tool used to analyze the competition within a company's industry. We will look at the threat of new entry, power of customers, threat of substitution, and

power of suppliers, and the current competitive rivalry within the industry. This will tell us what expectations we should have on the current and future competition, and ultimately, the profitability of the industry.

Threat of New Entry

Google is the current competitor in the marketplace, with significant economies of scale. For a new company to enter the market, there are significant requirements. First is the data. In order for any advertisement company to be competitive and offer relevant ads, they require lots of data related to who they are, whether that be from their search history, Facebook profile and activity, or their purchase history. Some of this data is available for purchase, however, this will require lots of money for a comprehensive dataset. And if any company is buying a dataset from another, they will have at best one as good as the other. Unless they can acquire and assemble a more comprehensive and detailed dataset, which will be costly, they will never perform better than the existing companies in this industry. However, with Facebook and Amazon, they have proven it is possible to break into the industry. But, neither of them started as an advertisement company. Both of them spent decades in their own industry and being the best at social media and online sales respectively, before they had the resources to enter the search industry.

The second is a means to display ads. Facebook and Amazon both display ads on their own sites. With Facebook, advertisements are embedded in a user's news feed, and more recently, in the Messenger platform. Similarly, Amazon shows promoted products as ads relevant to search criteria in the search results on their own site. Neither company allow third-party content hosts to embed relevant ads on their site like Google does. For a competitor to enter the market, they need some medium on which to display ads. Likely, as shown by Facebook and Amazon, the latest big players in the industry, they cannot compete the same way that Google does.

Lastly, they need customers. Without the scale that any of these other companies have, it's unlikely that any vendor looking to show certain users an ad will pay a new market entrant with very little scale. Google, Facebook, and Amazon have tremendous infrastructure. All three have a platform they can leverage that is visited by billions of users. In addition, each of them has a way to identify their users to provide relevant ads embedded within their platform. And, in the case of Google, they are primary distributor of ads outside of their platform, thanks to their product mix. Thus, the threat of new entrants is low.

Power of Customers

In this industry, there are a large number of companies trying to put ads in front of a lot of different people through the advertising company. Google is currently the dominant player in the marketplace, followed by Facebook and Amazon. This means almost all digital advertising goes through these three companies. And each of these three have their own individual strengths because of the data they gather from each of their users. For example, Facebook is the world's largest social media platform. The wealth of data from its users include not only their profile information, but who they interact with, their interests, likes, dislikes, events, and activities. Facebook is very good at knowing what a person likes, dislikes, what they do, and the kind of person they are. This is different than Amazon, who knows a user's and, and now with

family accounts, a family's purchase history. Google not only has a user's search history, but also location and travel, browsing history, video watching history, and a trove of other information. This will be discussed further in the Competitive Advantage/Core Competencies section.

Each company is good at displaying relevant ads to the specific type of people it can discern from the knowledge it has on the person. Meaning, no one company is replaceable. There is some overlap, however, which will be discussed in the Current Competitive Rivalry section. Because each company has a distinct competency, customers have few other alternatives to turn to. Because there are so many customers, the digital advertising companies hold more power of the customers. There is very little that customers can do to drive down the cost of service. Thus, the power of customers is low.

Threat of Substitution

Currently, there are few other goods or services that can provide worldwide exposure of a product or service. These include television advertisements, newspaper advertisements, and radio advertisements. And of those, none of them offer the level of targeting that these companies can provide. Because Google has such economies of scale with its various products working together and the amount of tuning and data collected it has done over the years, it's very difficult to replicate this, even with a substitute service. Thus, the threat of substitution is low.

Power of Suppliers

Google, Facebook, and Amazon have the advantage in that the source of their advertising data is almost completely vertically integrated. This means most operations in the value chain that are necessary to provide the services are done in house. For example, the data that is used to determine whether a user is the target audience for a specific ad is provided from within their own operations. And the platform that the ad is displayed on is native to the companies. There is the exception of Google's AdSense, which is a service Google provides to other content hosts to monetize their sites by embedding Google ads. However, there are many of these types of space providers that are trying to monetize their own sites or business, so the power of each individual one is low.

Because all of these companies serve their content through the internet, they are at the mercy of internet service providers. And after the repealing of net neutrality, internet service providers are no longer required to treat all traffic equally. This means that internet service providers have the ability to throttle the traffic coming from certain sources such as Google. However, while this is a concern, this is not in the best interest of the internet service provider. Because these are some of the most frequently accessed services online, should an ISP throttle traffic from any of these companies, customers of the ISP will become dissatisfied with the ISP and will switch network providers. This is not in the best interest of the ISP, so they have less power to throttle traffic. Therefore, the ISPs have moderate to low power to affect Google's advertising.

Current Competitive Rivalry

In this industry, there are currently a few main players. Google dominates the search industry and has been the main player for the past decade. With the rise of Facebook, the giant social media platform, a wealth of information is generated by users through creating profiles, liking and sharing posts, responding to events, and following pages. This data allows Facebook to intimately get to know users on their platform, and thus, positions the company greatly to begin advertising. Currently, Facebook has the second largest market share for digital advertisements. And much more recently, Amazon has started to become a player in the advertisement industry.

As mentioned in the Power of Customers section, each of Google, Facebook, and Amazon have their own core competencies and advantages. Marketers and companies looking to advertise their products or services often use more than just one platform. This ensures that there is a comprehensive spread of location on which ads are displayed, and that the strengths of the platforms are utilized. However, some companies are going to just one of the three for advertisements because of the type of product or service and the advantages. For example, many products are now being marketed solely on Amazon. When users are looking to buy a product, they go straight to Amazon. Conversely, services aren't sold on Amazon, so Facebook and Google have the advantage there.

While the competition in this industry is increasing among these three, Google still remains the dominant player. In 2018, Google reported revenue from advertising of \$116 billion. On the other hand, Facebook reported \$55 billion in revenue from advertising. Lastly, Amazon reported \$10 billion in revenue from advertising. The chart below shows the revenue from advertising for the three companies since 2016.

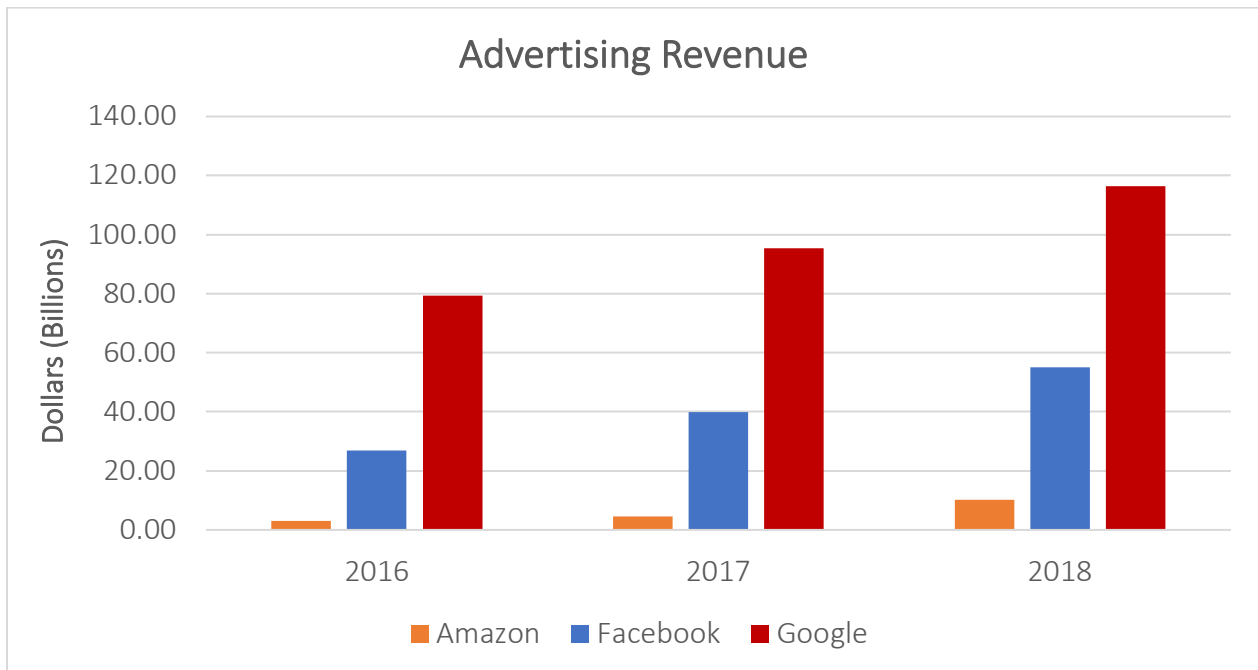


Figure 1: This chart shows the relative growth in revenue from advertising between 2016 and 2018. While Google and Facebook show large growth, proportionally, Amazon is growing rapidly.

Takeaways from External Analysis

While the external environment is radically shifting, opportunities are arising. Politically, there are changes to the sentiment of large tech companies, but there are large economic, social, and technological change that could open up many new avenues for Google to expand their advertising business. From the Porter's Five Forces analysis, we can see that there is low threat of new entrants and of substitution, and that the suppliers and buyers have relatively lower power. While the competition is intense, this is likely to remain a lucrative industry for Google.

Internal Analysis

An internal analysis will be performed in order to validate that what Google is doing internally is a good fit for the external environment. In particular, we will use a SWOT analysis, looking at the strengths and weaknesses of the company, as well as opportunities and threats to the company moving forward. In addition, we will look at the company culture and how that impacts the internal environment. And lastly, we will take a look at Google's competitive advantage, core competency, and leadership structure.

SWOT

A look into Google's strengths, weaknesses, opportunities, and threats to its ads business unit.

Strengths

Google is the leader in a variety of product areas. In addition to advertising and search, Google provides the best in consumer navigation, and internet browsers. It also has the highest market share of mobile phone operating systems in the world, and it provides a host of consumer and business productivity services. How these are related to the core product will be explained later in the Competitive Advantage/Core Competencies section.

Google engineers have created intuitive and useful applications that provide lots of value to consumers. These products are also developed to be highly reliable and fault tolerant, meaning users rarely experience suboptimal interactions with the products. Not only does this increase the number of users on the platforms, but it builds the brand's reputation, which is an incredibly important marketing tool that will facilitate adoption of products.

When problems arise, or change needs to be made, Google has the capital and the influence to be able to stir change. Similar to Facebook's plans to put a fiberoptic ring around Africa, Google Fiber is an effort to better the network landscape in the United States. The internet provider service failed to convert a mass scale of internet users at a sustainable cost, but that was never the end goal. The end goal was instead to bring attention to the current growth of broadband technology, like fiberoptic, and to scare other internet service provider companies like Comcast in providing the better technology and rates to internet users. So even though Google's core business unit has very little to do with broadband, it is able to use its influence to spark change for the better when needed.

Weaknesses

While Google has the most widely used search engine, the internals of both the search results and advertising results are a black box. How each algorithm works is not public knowledge, and that secrecy is generating some skepticism and fear from consumers.

With Trump adamantly bringing into light the problem of “fake news,” Google’s proprietary algorithm can easily be pointed to. Because consumers don’t know how it works, it’s easy to hypothesize that there is some internal bias within the algorithm. The Trump administration fears that Google may be pushing their own political beliefs and suppressing theirs. Because the algorithm is a black box, it’s possible that it can be blamed for the bias regardless of if there is any because the answer is not apparent. For example, in March of this year, Google was fined \$1.7 billion in the EU for restricting rivals’ ads, violating anti-trust regulations.

Similarly, the average consumer has no idea how they are chosen as the target for specific ads. The deeper problem is that they have no idea what data is collected about them. Because Google has an incredibly diverse and popular product mix, Google interacts with a large portion of the human population every single day. There is a lot of data Google likely collects about the users and their usage. Again, this is not transparent, so users are unaware of what information is collected. And as users become more fearful of privacy, this could become an issue.

Another weakness is that nearly all of Google’s revenue comes from digital advertising. This causes an increase in risk. Since the other Bets and business units are funded by revenue from the cash cow, if advertising revenue were to decline, the entire company would suffer.

Opportunities

With the development of new technology, there are many new opportunities to capitalize on to expand Google’s business. As mentioned earlier in the *Economic* section of the PEST analysis in the *External Analysis* section, more of the world is becoming developed and have better integration with technology. As the internet expands into these areas, it opens up new key markets. Granted, these markets may only be profitable far down the road after a certain amount of economic development.

A few of Google’s main products, such as YouTube and Android did not start out in-house. Rather, they were the result of acquisitions strategically made to expand into other business ventures. When other companies or research groups make headway into an area of research related to one of Google’s products or fits within its core business, Google will acquire them and integrate them into products. This allows Google to rapidly advance their technology and continue innovating and pleasing customers. Google has the power and the opportunity to continue acquire.

Other innovations are a natural extension of a current product. Recently, as cars become more advanced, manufacturers are putting touch screens on that dashboard, replacing the classic buttons and knobs. Currently, companies in Silicon Valley are fighting to be the one to power the screen in the car. This is an opportunity for Google because it’s an extension of both their mobile

operating system, as well as navigation technology. In fact, recently, Google is speculating different ways to monetize the Google Maps platform. Google also has the advantage with Google Assistant, an AI assistant with speech-recognition capabilities that could provide hands-free interactions with the car screen.

Threats

As stated in its 2018 Annual Report, Google faces a lot of risks that could affect the business. The key threats are the competition and regulation domestically and internationally.

Facebook and Amazon have the second and third largest digital advertising revenue in 2018 in the United States. While Google continues to grow revenue, these two companies are fiercely innovating and disrupting their respective industries. Should Google become stagnant or make a wrong move, it's likely that it will quickly fall behind.

There are other companies that are offering steep competition. In China, where Google is blocked, Baidu has the entire market for search. Baidu is also quickly innovating in similar tangential product areas, like artificial intelligence, similar to the leading tech firms here. This is concerning because, first, there is an increase in competition. If Baidu were to expand internationally, Google will be unable to completely beat them in search because they are safe in China. Secondly, this precedent could mean that other countries follow in banning Google, mitigating any international expansion.

Google search dominates horizontal search. Horizontal search is finding results from many different domains. On the other hand, vertical search is finding results within a very specific domain. An example of this is Amazon, who specializes in selling products. There are many other sites that specialize in vertical search, including Zillow and Kayak, which are sites for searching housing and travel, respectively. They cannot replace Google search entirely, but with increase in popularity, it drives search queries related to the subject away from Google and into the vertical search engine. This decreases total traffic from Google and removes potential to host and serve ads to consumers who are now using the vertical search engine.

Google's operations are also limited by both domestic and international laws. As shown by the GDPR violation fines and anti-trust penalties, Google is treading in dangerous water and needs to continue to evolve with the law, even if it means cannibalizing part of its business. Because Google is an international company with a very diverse product mix, it faces the difficulty of having to ensure that the products and the data collection are in line with the rules and regulations of every country it operates in.

Mentioned earlier, ad blockers pose as a new technological threat to Google. Browsers are now allowing users to create and install extensions to their browsers, effectively allowing users to customize how certain pages load or add additional features. One such type intercepts network requests and stops it from going through if it is for loading an ad from Google. Not only do users not have to deal with ads, but this increases performance of the page rendering. But this decreases the amount Google earns because the ad doesn't get shown to users. Google is

currently changing its Chrome browser extension API to no longer allow the extension to prevent the request from going through. However, this may spark outrage from avid ad blocker users.

Core Competency/Competitive Advantage

Google's core competency is that it is the best at serving advertisements to the type of people companies are targeting. Google has two distinct competitive advantages that lead to its core competency.

The first is that Google has access to some of the world's best and most passionate software engineers. Because of the culture it has developed, the reputation it has earned, and the benefits it provides, Google consistently is one of the best places to work. And the employees of the company are what makes it great. Google is a prestigious company to work for and is sought after by a large majority of software engineers. Thus, Google has its pick of employees and can be incredibly selective and ensure they pick only the best employees. In turn, these employees continue to build great products and great culture, which continues the cycle.

Google strives to make its culture one where its employees are excited to come to work. Employees get to indulge in a variety of benefits, such as free food, snacks, drinks, a pet-friendly campus, and a variety of provided services such as dry-cleaning. Google also provides its employees freedom to innovate, to work on things they are passionate about, and the freedom to work flexible hours.

The second is less obvious. It's apparent that Google has a very diverse product mix, but behind the scenes, all of these products are working together to gather information about consumers. Search and YouTube are the two obvious ones that result in data collected. Google Maps and Gmail are also quite apparent. However, how do Google Chrome fit in? In fact, Google has its own DNS server and is a Certificate Authority. The DNS is the domain name system, meaning when a user goes to a website, the DNS server translates the website domain to the location of the server accessed. A Certificate Authority is a known and trusted entity that signs certificates given to websites that mark them as reliable. Google also provides a front-end framework that gets used by other software developers to provide insights into how users are using their app called Google Analytics. All of these get used to understand who a user is.

A handful of these are simply methods to track more information, like through Google Analytics, the DNS server, and the Certificate Authority. However, by design, Google is providing great and usable platforms for free in order to promote the services that generate the most revenue. For example, Android as an operating system is completely free and open source, meaning any manufacturer that wants to build on top of or use Android is able to. This drives down the cost of developing additional operating systems and allows mobile phone companies to provide phones at a cheaper price. So, Google has essentially reduced the cost of smartphones, meaning more people can afford them. With more users on the platform, more people can perform search through Google from their phone, where Chrome is the default. A similar thing is done with

Chrome. Google is not only good at figuring out who its users are, but subtly promoting their own products by introducing free, high quality products.

Leadership

While it's typical for large companies to organize in deep hierarchical structures, Google maintains a flatter structure. Rather than a large chain of managers, Google emphasizes the importance of teamwork and being peers. These teams then hold more responsibility but have more freedom to drive the products they work on. Having the structure while maintaining flexibility for innovation allows Google to thrive and maintain its edge.

In 2015, Sundar Pichai became the CEO of Google, after Larry Page stepped down to lead the parent company Alphabet. While the typical image of a Silicon Valley CEO is emotionally volatile, Sundar Pichai is very even-keeled and emotionally mature. Google is currently a mature business, continually reinventing itself to be at the cutting-edge of the industry. As the leader of its industry, it is appropriate that Pichai leads the company with rational and well-thought-out decisions. His agreeable manner, complemented with his ability to make other very smart people shine, makes him an incredibly effective leader.

Strategy Recommendation

Goals

Google's goals should be to ultimately maximize profit. Google's revenue has continued to grow over the past several years, meaning the Google Ads business segment has been prospering. However, at the same time, Facebook and Amazon have also been growing very rapidly, meaning the industry as a whole has been growing. If Google does not continue to expand and improve its business, eventually Facebook and Amazon may be cutting into Google's revenue.

Alternatives

Four strategic alternatives will be presented.

1. Form a strategic partnership with Amazon to increase coverage of Amazon Ads
2. Invest heavily in being the one to power the screen in the car
3. Begin investing in creating vertical search platforms
4. Invest in bringing internet to developing countries

Partnering with Amazon

When Amazon first started becoming a concern and pulling significant amounts of traffic from Google, Google began to counter this by introducing Google Shopping. Amazon became a distributor and a warehouse for products sold on the site. This undercut a lot of retailers. To combat this and to pull competition from Amazon, Google Shopping allowed smaller retailers to promote their products through Google Shopping ads on the front page of the search results. In theory, this would empower retailers partnering with Google's new marketplace to not have to pay a commission to Amazon, but rather just pay for promotion. However, in 2017, the EU fined Google \$2.7 billion for anti-trust violations by placing the Google Shopping matches at the top of

the search results page above any other online marketplace. Since, Google Shopping has continued to live on a page separate from the search results page.

Rather than try and undercut Amazon, Google should consider partnering with Amazon. Amazon has previously shown ads through Google's AdSense service. But more recently, it has found success in promoting its own ads. This has limitations for Amazon, as these ads cannot be reached outside the platform. Google is suffering since many buyers of ads are forgoing Google ads and going straight to Amazon to market their products.

By partnering with Amazon, Google can skim some profit off of the ads that would have simply skipped Google and gone straight to Amazon. This helps Google retain profit. Amazon benefits because products sold on its platform get to be marketed outside of just the Amazon site and can be shown to relevant users on other sites that utilize AdSense, or straight from the search results on Google.

First to the Car

Many companies in Silicon Valley are trying to be the first to claim their rightful place on the dashboard. This is known as the "fourth screen", after television, computer, and mobile devices. Google has the resources and the infrastructure to be the first. Google should make a strategic partnership with a car manufacturer and claim the fourth screen. In fact, Google has already begun exploring this business segment.

Google already seeks to monetize maps. Integration into a car dashboard offers a seamless way to do this. Google already excels in navigation and has the Android operating system. By claiming the fourth screen, Google can provide an intuitive user interface for users to interact with their car, as well as a completely integrated navigation system powered by Google Maps. Google then has an opportunity to offer promoted suggestions as a way of monetization.

However, there are lots details that need to be smoothed out. There are a lot of potential features that could enhance the safety of the car that might be seen as invasive. In a meeting Sundar had with the Chief of the Volkswagen brand Herbert Diess, Sundar asked whether the dashboard would be able to access information such as fuel levels to better suggest routes for filling up gas, or weight of the passenger to ensure safety if they were a child or an adult. This can be seen as invasive of privacy, and auto manufacturers are hesitant to release such control.

Vertical Search

As mentioned in the Threats section of the SWOT analysis in the Internal Environment section, Google faces a steep challenge in preventing better vertical search engines from pulling traffic from Google's search. Already, sites like Amazon, Zillow, Kayak, and WebMD are being utilized to search for queries within the specific domain. Google loses out by not being able to monetize ads when companies skip over Google and go straight to the vertical search engine to advertise. This also pulls potentially many search queries away from Google and onto the other platform.

Google has already begun creating better travel-centric user experience. Features have already been added to assist users in planning their trips. However, its competing with Kayak, and has actually been playing catch up. Best practices with design have been tested out by other services, while Google lags behind implementing them itself.

Instead of reacting to these new threats, Google should actively seek to create vertical search engines of its own, starting with the industries that have the highest click-through-rate or cost-per-click. These industries are the most valuable to Google, because they generate the most amount of revenue with the pay-per-click business model. Should another company develop a service to dominate these industries and pull traffic from Google, Google would lose a lot of revenue. Rather than wait for new threats, Google should make the first move. As said by Lester Thurow, "Sometimes successful businesses have to cannibalize themselves to save themselves."

Bringing Internet to the Rest of the World

As mentioned in the Economic section of the PEST analysis of the External Environment section, as of 2018, an estimated 51% of the world has internet access. As more developing areas are connected to the internet, the more potential markets open. The faster that the world becomes connected, the sooner internet-based companies will be able to capitalize on the new markets.

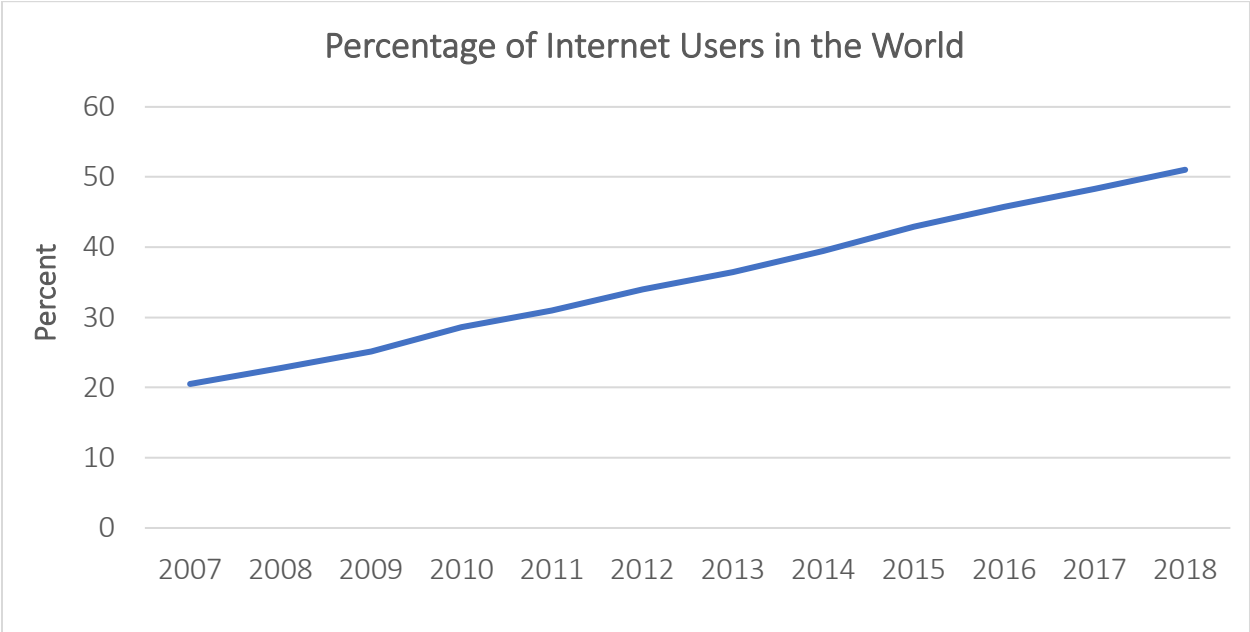


Figure 2: The percentage of users connected to the internet in the world is increasing rapidly. Note: this chart does take into account the growth of population.

On average, worldwide internet connectivity has increased on average 8.6% per year over the last 10 years. With large projects like what Facebook sets out to do with project Simba, connectivity can continue increasing at this accelerated pace, or even faster. In fact, Simba isn't the first plan doing this. In 2017, Microsoft and Facebook laid an international submarine fiber optic cable capable of transmitting tremendous amount of data between Spain and the

United States. This is one of many international submarine cables laid by a tech company in the past decade.

These companies are the ones responsible for driving up internet traffic. As more consumers are trying to access their servers, the need for more bandwidth goes up. To improve consumer experience, these companies have begun purchasing unused cable and laying their own. Typically, it's the responsibility of telecom companies to lay cable, however they lack the cash to do so. So, companies like Microsoft, Facebook, Amazon, and Google are taking the initiative and partnering with telecom companies to fund the cables. Many of these cables are shared, but some are dedicated, meaning the companies laying them get priority. Simba is to be a dedicated cable. Google is currently the biggest investor in submarine cables, with two of its own dedicated cables. Each of these cables cost hundreds of millions of dollars, which is just a fraction of the revenue of these companies.

A majority of the cables being laid are submarine, meaning they are put on the bottom of the ocean floor and run from the coast of one country to another. However, inland users need to somehow be connected to this cable. This means that is necessary to either lay cables underground on land or create wireless network towers for users to connect to. So, even though Facebook is building a ring around Africa, doesn't mean that the Africans can immediately benefit. It reduces the cost of connecting internationally, but to connect each home to the network that connects to the cable still costs a tremendous amount of money. In 2017, Facebook laid an underground cable system 200 miles long connecting to a datacenter, which also cost them hundreds of millions of dollars. To connect millions of inland Africans would cost enormous amounts of money.

Google could start laying underground cable to speed up connection of inland consumers to the internet. This would increase number of users on their platform. However, this has large legal and ethical implications and could cause some concern or penalties of monopolistic behavior. What may be meant as a benign service, could be viewed as a manipulation of vulnerable populations.

Recommendation

These alternatives are things that are natural extensions of things that Google is currently doing or was doing. The suggestions are simply reiterations of what Google is currently doing. These four alternatives are being mentioned because they are potentially high-value endeavors that need to be highlighted. Moving forward however, Google should partner with Amazon to advertise promoted products on Amazon through its own advertising service, claim the fourth screen, begin cannibalizing its search platform with vertical search engines, and continue expanding the internet without being too invasive of developing countries.

Implementation Plan

Google is large enough that it can do these 4 things concurrently. All of these have great value if done sooner than later.

The easiest to implement and hardest to get wrong is advertising with Amazon. Every dollar that Amazon gets from advertising is a dollar that came from Google's revenue or potential revenue. So, creating some sort of partnership would be advantageous for Google. In 2018, Amazon's revenue was \$10 billion from advertising. If Amazon offered a deal in which the purchaser of the ads could also put their product on Google's ad platform for a markup in price that is cheaper than putting them on both, Google could then cash in on the profits. The marginal cost of serving the additional ad is next to nothing because Google already has the infrastructure.

So as an example, Google could negotiate with Amazon to provide an option to Amazon ad purchasers to pay for also having the Amazon product to be shown through Google ads at 50% of the cost of putting it just on Google. If we assume that this is a good enough deal that at least 50% of the purchasers choose this option, then Google will capture 25% of the loss. In the case of the past year, that would translate into \$2.5 billion in revenue. That's just a fraction of their current revenue, but as Amazon grows, undoubtedly so will its revenues. And having this method of recapturing some of that lost revenue will be more important as Amazon begins to get more of the market share.

The highest potential risk-reward strategy recommendation is to capture the fourth screen. Google is already negotiating with automobile manufacturers on what kinds of possibilities there are. But if it hasn't already, it should set aside resources to create the dashboard screen. Because Google is the owner and largest contributor to the Android operating system, it should be able to adapt it very quickly to create a prototype. In addition, because Google Maps is a native product, it should be trivial to utilize and optimize the APIs within the screen. Google also has a lot of resources that can aid in its development of the product. For example, Waymo is Alphabet's self-driving car. Google can potentially test with, gain insight from, or employ some Waymo personnel. Furthermore, Waze is a navigation app that provides similar services to Google Maps but is powered by community, rather than a database. Meaning navigation decisions are created by the data from other users. Waze is owned by Google, so, in addition to Google Maps, the prototype could leverage Waze. This would have benefits at scale, because Waze is designed to work better at scale. With world-class software engineers and access to these resources, Google is positioned to become the first to market with a superior product. And as mentioned earlier, with the plans to monetize Google Maps, this would help Google do that at scale.

However, this is the easy part of the plan. The harder part of the plan is to convince other manufacturers to adopt this product and to negotiate to figure out what information from the car they will allow Google to use. While Google may be using this to provide a better experience, because of the lack of transparency of its data collection, manufacturers are skeptical of providing Google with information such as weight of passengers in each seat, fuel levels, and potentially even location. With new regulations and sentiment about privacy, many tech companies moving forward with ensuring users' data is protected and in their control. With this in mind, it may be possible for Google to convince manufacturers to accept what Google has to offer. It may be advantageous to start by offering the bare minimum as a way to get traction,

and then slowly begin upgrading the software and offering more features for convenience for the consumers. The average car life span is about eight years, so in a decade, a large portion of the cars on the road will likely already have digital dashboards, so this is a market that Google should enter soon.

As for providing more internet access to the rest of the world, Google should continue to do what it's doing. By adding more cable internationally and setting up the infrastructure, they are allowing other companies that specialize in laying cable and providing service to reduce their costs and expedite the process. Google should simply continue what they are doing in this area.

Lastly, the hardest one to implement is the cannibalization of its core business to reinvent itself. It's worth noting that horizontal search will never permanently disappear. Even though many different vertical search engines may dominate certain industries, it will never replace the how Google Search permeates all industries and returns a comprehensive list of results.

As mentioned earlier, Google should begin with the industries with the highest click-through-rate or cost-per-clicks, the most lucrative advertising industries, where Google has a chance of competing. According to WordStream, an online advertising platform that manages user ads with Google's and Microsoft's ad services, in 2018, the highest click-through-rates and cost-per-click are dating and personalities, travel and hospitality, advocacy, auto, housing, legal, and consumer services (B2C services). A few of these, Google may not want to get into. And the rest of these may be too broad or already have vertical search engines for it. Nevertheless, Google has the resources and a plethora of skilled personnel. The sooner Google can provide vertical search, the sooner it can prevent other companies from stealing traffic and ad customers. The only thing Google needs to be careful of is promoting its own products and violating anti-trust laws.

Contingency Plan

Google excels in staying at the forefront of innovation. Google is very good at staying up to date with various technologies and new developments, even being the leader in some cases. As long as Google can continue to do this, it will continue to stay relevant and be a strong performer.

Should Amazon refuse to partner with Google for offering a premium deal to ad buyers, Amazon will continue to hurt Google's potential revenue, but it will not drive Google out of business. Google should then focus more on the producers or marketers of products or services that are not or cannot be sold on Amazon and begin investing its resources there. Google still has an advantage with its reach and understanding of customers. As long as it continues to provide valuable resources for marketers, Google will remain a leader in advertising.

Should Google not be the first to conquer the first the fourth screen, the time spent on research and development will not be wasted. It will hopefully be useful for Waymo. Also, Google has the power to acquire companies that may have assets or resources to spur development. Google has the means to become a leader in this area, and given the growth of technology, it appears the adoption of the digital dashboard is inevitable.

Vertical search will be a heavy investment. With the technology and expertise of software engineers at its fingertips, there is no doubt that it can create something great. In this arena, Google should do its best and continue to persevere even if it faces steep competition. Should it be unsuccessful, Google should reevaluate what options there are for vertical search, or what industries can be siloed in search, or how Google can provide a separate platform for consumers of a particular subject.

Works Cited

- 13 Reasons Google Deserves Its 'Best Company Culture' Award. (2018, February 08). Retrieved from <https://www.forbes.com/sites/forbestechcouncil/2018/02/08/13-reasons-google-deserves-its-best-company-culture-award/#46b9f0303482>
- Alphabet Inc. (2019). 2018 10-K Form. Retrieved from <https://abc.xyz/investor/>
- Amazon. (2019). 2018 Annual Report. Retrieved from <https://investor.fb.com/home/default.aspx>
- Baron, E., & Baron, E. (2018, February 02). Google's parent firm Alphabet takes \$10 billion hit from new U.S. tax regime, reports \$3 billion loss. Retrieved from <https://www.mercurynews.com/2018/02/01/googles-parent-firm-alphabet-takes-10-billion-hit-from-new-u-s-tax-regime-reports-3-billion-loss/>
- Bode, K. (2018, September 19). Google Fiber's 'Failure' Succeeded In Shining A Light On Pathetic Broadband Competition. Retrieved from <https://www.techdirt.com/articles/20180910/10561640607/google-fibers-failure-succeeded-shining-light-pathetic-broadband-competition.shtml>
- Browser Market Share Worldwide. (n.d.). Retrieved from <http://gs.statcounter.com/browser-market-share#monthly-200901-201903>
- Castillo, M. (2018, October 09). Some advertisers are moving half of their search budget from Google to Amazon: Ad industry sources. Retrieved from <https://www.cnbc.com/2018/10/08/google-search-losing-some-advertising-business-to-amazon-ad-sources.html>
- Claburn, T. (2019, January 25). Wow, fancy that. Web ad giant Google to block ad-blockers in Chrome. For safety, apparently. Retrieved from https://www.theregister.co.uk/2019/01/22/google_chrome_browser_ad_content_block_change/
- Dahir, A. L. (2018, December 11). Half the world is now connected to the internet-driven by a record number of Africans. Retrieved from <https://qz.com/africa/1490997/more-than-half-of-worlds-population-using-the-internet-in-2018/>
- Dillet, R. (2019, January 21). French data protection watchdog fines Google \$57 million under the GDPR. Retrieved from <https://techcrunch.com/2019/01/21/french-data-protection-watchdog-fines-google-57-million-under-the-gdpr/>
- Enge, E. (2019, April 11). Mobile vs Desktop Usage in 2018: Mobile widens the gap. Retrieved from <https://www.stonetemple.com/mobile-vs-desktop-usage-study/>
- Epstein, R. (2013, May 10). Google's Gotcha. Retrieved from <https://www.usnews.com/opinion/articles/2013/05/10/15-ways-google-monitors-you>

Facebook Inc. (2019). 2018 10-K Form. Retrieved from <https://investor.fb.com/home/default.aspx>

Farivar, C. (2019, January 21). Google must pay €50 million for GDPR violations, France says. Retrieved from <https://arstechnica.com/tech-policy/2019/01/google-fined-57m-after-france-finds-violations-of-new-eu-privacy-law/>

FitzGerald, D. (2019, April 07). Facebook Looks to Build Underwater Ring Around Africa. Retrieved from <https://www.wsj.com/articles/facebook-looks-to-build-underwater-ring-around-africa-11554649200?mod=searchresults&page=1&pos=3>

FitzGerald, D. (2019, April 07). Facebook Looks to Build Underwater Ring Around Africa. Retrieved from <https://www.wsj.com/articles/facebook-looks-to-build-underwater-ring-around-africa-11554649200?mod=searchresults&page=1&pos=3>

Fung, B. (2019, March 22). 4 ways Trump could go after Google. Retrieved from <https://www.chicagotribune.com/business/ct-trump-google-20180829-story.html>

Gandel, S. (2019, January 14). Tax Cut Is Better (for Companies) and Worse (for Everyone Else). Retrieved from <https://www.bloomberg.com/opinion/articles/2019-01-14/trump-tax-cut-turns-out-both-better-and-worse>

Global social media ranking 2019 | Statistic. (n.d.). Retrieved from <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>

Google Launches Self-Service Advertising Program. (2000, October 23). Retrieved from <http://googlepress.blogspot.com/2000/10/google-launches-self-service.html>

Google Shopping Actions New Marketplace to Compete with Amazon. (2018, May 01). Retrieved from <https://www.acquisio.com/blog/innovation/google-shopping-actions-compete-with-amazon/>

Higgins, T., & Boston, W. (2019, April 06). The Battle for the Last Unconquered Screen-The One in Your Car. Retrieved from <https://www.wsj.com/articles/the-battle-for-the-last-unconquered-screenthe-one-in-your-car-11554523220>

How Google is Looking to Monetize Maps. (2019, April 10). Retrieved from <https://www.bloomberg.com/news/videos/2019-04-10/how-google-is-looking-to-monetize-maps-video>

Irvine, M. (2019, April 10). Google Ads Benchmarks for YOUR Industry [Updated!]. Retrieved from <https://www.wordstream.com/blog/ws/2016/02/29/google-adwords-industry-benchmarks>

It's a remarkable pile of money -- idled outside U.S. borders to avoid a 35% American tax rate on profits earned overseas. (2017, November 3). Why big American companies stash cash overseas. Retrieved from <https://money.cnn.com/2017/11/03/news/companies/romans-numeral-overseas-cash/index.html>

Johnson, L. (2016, July 26). IAB Study Says 26% of Desktop Users Turn On Ad Blockers. Retrieved from <https://www.adweek.com/digital/iab-study-says-26-desktop-users-turn-ad-blockers-172665/>

Kelion, L. (2017, June 27). Google hit with record EU fine over Shopping service. Retrieved from <https://www.bbc.com/news/technology-40406542>

Metz, C. (2017, June 03). Facebook and Microsoft Are Laying a Giant Cable Across the Atlantic. Retrieved from <https://www.wired.com/2016/05/facebook-microsoft-laying-giant-cable-across-atlantic/>

Mobile Operating System Market Share Worldwide. (n.d.). Retrieved from <http://gs.statcounter.com/os-market-share/mobile/worldwide>

Nath, D. (2019, April 12). Facebook wants to install a massive fiber optic cable around Africa. Retrieved from <https://www.foxnews.com/tech/facebook-wants-to-install-a-massive-fiber-optic-cable-around-africa>

Number of internet users worldwide 2005-2018. (n.d.). Retrieved from <https://www.statista.com/statistics/273018/number-of-internet-users-worldwide/>

Nutting, R. (2018, July 03). Corporations brought home \$350 billion after tax cut, but they haven't put it to work. Retrieved from <https://www.marketwatch.com/story/yes-corporations-have-brought-home-cash-after-the-tax-cut-but-they-havent-put-it-to-work-2018-06-29>

O'Connell, B. (2018, December 31). History of Google: How It Began and What's Happening Beyond 2019. Retrieved from <https://www.thestreet.com/technology/history-of-google-14820930>

O'Neill, S. (2018, February 07). Google Is One Step Closer to Its User-Centric Vision of Travel Booking. Retrieved from <https://skift.com/2018/02/06/google-is-more-aggressively-connecting-its-flight-and-hotel-products/>

O'Neill, S., & O'Neill, S. (2018, February 07). Google Is One Step Closer to Its User-Centric Vision of Travel Booking. Retrieved from <https://skift.com/2018/02/06/google-is-more-aggressively-connecting-its-flight-and-hotel-products/>

Rainie, L. (2018, March 27). How Americans feel about social media and privacy. Retrieved from <https://www.pewresearch.org/fact-tank/2018/03/27/americans-complicated-feelings-about-social-media-in-an-era-of-privacy-concerns/>

- Rao, S. (2018, September 12). In today's homes, consumers are willing to sacrifice privacy for convenience. Retrieved from https://www.washingtonpost.com/lifestyle/style/in-todays-homes-consumers-are-willing-to-sacrifice-privacy-for-convenience/2018/09/11/5f951b4a-a241-11e8-93e3-24d1703d2a7a_story.html?utm_term=.0730e8fd9f05
- Romm, T. (2019, March 22). Trump's economic adviser: 'We're taking a look' at whether Google searches should be regulated. Retrieved from <https://www.chicagotribune.com/news/nationworld/ct-google-searches-regulation-20180828-story.html>
- Schechner, S., & Pop, V. (2019, March 20). Google Fined \$1.7 Billion in EU for Restricting Rivals' Ads. Retrieved from https://www.wsj.com/articles/google-fined-1-7-billion-in-eu-over-ad-restrictions-11553080506?mod=article_inline
- Seal, T. (2019, March 14). The Undersea Cable Market Is Booming Again, This Time Funded by Big Tech. Retrieved from <https://www.bloomberg.com/news/articles/2019-03-14/undersea-cables-are-no-longer-underwater-as-fiber-booms-again>
- Search Engine Market Share. (n.d.). Retrieved from <https://netmarketshare.com/search-engine-market-share.aspx>
- Sloane, G. (2019, January 31). Amazon makes major leap in ad industry with \$10 billion year. Retrieved from <https://adage.com/article/digital/amazon-makes-quick-work-ad-industry-10-billion-year/316468>
- Spangler, T. (2018, September 19). Amazon on Track to Be No. 3 in U.S. Digital Ad Revenue but Still Way Behind Google, Facebook. Retrieved from <https://variety.com/2018/digital/news/amazon-us-digital-ad-revenue-google-facebook-1202947923/>
- Stevens, J. (2019, January 29). Internet Statistics & Facts (Including Mobile) for 2019. Retrieved from <https://hostingfacts.com/internet-facts-stats/>
- Sverdlik, Y. (2017, May 24). Facebook Building Own Fiber Network to Link Data Centers. Retrieved from <https://www.datacenterknowledge.com/archives/2017/05/24/facebook-building-own-fiber-network-to-link-data-centers>
- Sverdlik, Y. (2017, September 22). Facebook and Microsoft's High-Capacity Submarine Cable to Europe Complete. Retrieved from <https://www.datacenterknowledge.com/networks/facebook-and-microsoft-s-high-capacity-submarine-cable-europe-complete>
- Tabatabai, A., & Tabatabai, A. (2019, January 26). Has the fight over privacy changed at all in 2019? Retrieved from <https://techcrunch.com/2019/01/26/has-the-fight-over-privacy-changed-at-all-in-2019/>

Tech Has Gone From the White House to the Doghouse in Trump's Washington. (2017, August 21). Retrieved from <http://fortune.com/2017/08/21/google-tech-white-house-president-donald-trump/>

The CNIL's restricted committee imposes a financial penalty of 50 Million euros against GOOGLE LLC. (n.d.). Retrieved from <https://www.cnil.fr/en/cnils-restricted-committee-imposes-financial-penalty-50-million-euros-against-google-llc>

The EU General Data Protection Regulation (GDPR) is the most important change in data privacy regulation in 20 years. (n.d.). Retrieved from <https://eugdpr.org/>

The Google Acquisition Tracker. (n.d.). Retrieved from <https://www.cbinsights.com/research-google-acquisitions>

Theintercept. (2016, April 22). Google's Remarkably Close Relationship With the Obama White House, in Two Charts. Retrieved from <https://theintercept.com/2016/04/22/googles-remarkably-close-relationship-with-the-obama-white-house-in-two-charts/>

Thompson, B. (2018, March 27). Yahoo, Tumblr, and the Signal-to-ads Cycle. Retrieved from <https://stratechery.com/2013/yahoo-tumblr-and-the-signal-to-ads-cycle/>

Thompson, B. (2018, March 27). Why Doesn't Apple Enable Sustainable Businesses on the App Store? Retrieved from <https://stratechery.com/2013/why-doesnt-apple-enable-sustainable-businesses-on-the-app-store/>

Those three tech behemoths held a total of \$464 billion in cash at the end of last year. (2017, July 19). Apple, Google and Microsoft are hoarding \$464 billion in cash. Retrieved from <https://money.cnn.com/2017/07/19/investing/apple-google-microsoft-cash/index.html>

U.S. ad blocking reach 2020 | Statistic. (n.d.). Retrieved from <https://www.statista.com/statistics/804008/ad-blocking-reach-usage-us/>

Vranica, S. (2019, April 04). Amazon's Rise in Ad Searches Dents Google's Dominance. Retrieved from <https://www.wsj.com/articles/amazons-rise-in-ad-searches-dents-googles-dominance-11554414575>

Weisbaum, H. (2006, March 28). What's the life expectancy of my car? Retrieved from http://www.nbcnews.com/id/12040753/ns/business-consumer_news/t/whats-life-expectancy-my-car/

World Population by Year. (n.d.). Retrieved from <http://www.worldometers.info/world-population/world-population-by-year/>