Asian Institute of
Digital Transformation

CASE STUDY ANALYSIS REPORT (CSAR)

WEEK 1 SYLLABUS: EXPONENTIAL TECHNOLOGIES
(The Drivers of Digital Transformation)

CASE STUDY: GOOGLE SEARCH ENGINE

Google (NASDAQ: GOOGL), apart from being the *search giant*, is also the leader in the *digital advertising* industry. The company has enjoyed enormous growth over the last five years, driven by increased technology usage worldwide and a fast-expanding smartphone user base. While Google is the undisputed leader in search advertising, it also enjoys the lion's share in digital advertising overall. In 2019, Google surpassed Apple to become the *world's most cash-rich* company. After Amazon and Microsoft, Google is the t*hird-largest brand* in the cloud industry.

The company has continued to expand its line of products and services. Throughout its lifespan, Google also made several important acquisitions that enabled it to strengthen its core business. For several years it has been following the *build or buy strategy* to grow its overall market influence. Finding stronger growth in the future would require Google to reduce its reliance on digital advertising and build new growth channels. As spending on cloud services grows worldwide, the **Google Cloud Platform** could become the next growth driver.

Who Are Google's Customers?

Google's *mission* is to organize the world's information and make it *universally accessible and useful*. This also gives us an indication of the customer segments that Google is targeting. The company strives to make all the information accessible to people around the world via the internet. It means everyone who needs and uses the internet to search for information is a potential target user for Google. It includes everyone who can use the internet and search online from kids to the elderly.

However, you will see that the company has brought a large range of products that target mainly the ***tech savvy millennial customers***. Millennials are the core segment of customers that use the internet enabled products and embedded services.

They are a highly tech savvy generation and have been using technology since they were kids. The millennial users have grown up with technology and use a large range of Google products on a daily basis. From the chrome browser to Google search and Gmail as well as other Google products like the android platform and Google play, the millennial users are among the core customers of Google.

The **millennial customers** are also the largest group of internet users. According to a research study by Pew Research Center carried out during early 2019 in the United States, millennials were the largest target customer segment for technology brands. While they stood out for their technology usage, the elder groups were also growing more active on the internet and in terms of technology use. According to the study, 93% of the millennials owned and used smartphones. While around 100% of the millennials are now internet users, 19% of them use internet only on smartphone devices. However, around 91% of GenXers and 81% of Baby Boomers also use the internet. Google is a global brand and has users from around the world. Its Android smartphone OS is used globally by the largest number of smartphone users.

Apart from the regular or average users, Google also has a large target market in the form of **corporate users**. Worldwide and in various industries, Google products are used by a large number of companies including tech, cloud, education, entertainment and other industries. Its cloud products target a vast base of corporate users. Among the leading customers of **Google's Cloud Platform** are HSBC, Home Depot, Target (retail brand), Paypal, McKesson, 20th Century Fox and The NewYork Times. However, its cloud segment contributes to only a small part of its net revenue. The main target markets are the advertisers,including big and small advertisers. Google generates a substantial part of its revenue from advertising. Even large tech brands like Amazon are among the leading customers of Google's digital advertising services.

Main Pillars of Google's Business Growth Strategy

To grow its user base globally, Google has continued to expand its product line. Starting from the search engine, Google has vastly expanded its product portfolio.

Apart from the chrome browser and the Gmail and its advertising business, the company has added several more apps and services. Some of these were built in-house, whereas the others were acquired from outside. Google acquired Android as well as YouTube and Double Click. Its acquisition of the Android operating system proved to be great in expanding the presence of the brand across the mobile segment. Google Play houses millions of apps and generates a sizable revenue for the company each year. However, Google's business has also boosted the company's expansion into the cloud industry.
The tech giant is already the third largest tech payer in the cloud industry and expects faster growth in the near term.

Despite a much lower annual revenue run rate than the two largest firms in the cloud industry – Amazon and Microsoft – Google has been able to win some massive deals, which indicate its strengthening clout in the cloud sector. Its revenue from YouTube ads has also grown. In most business segments, Google's position against its rivals is a lot stronger except for the cloud sector. It is ahead of Facebook, Amazon, and Microsoft in search advertising. In the longer term, too, the company can continue to find growth by introducing new small and large apps and services.

Focus On Technological Innovation

Google's focus on **research and development** has continued to grow since most of its growth has mainly been driven by technological innovation. It is among the most innovative tech firms globally and one of the leading spenders on research and development, where Amazon leads the entire industry. Several factors necessitate an aggressive focus on R&D in the tech industry. The level of competition in the tech industry has continued to intensify, and all the tech leaders are investing aggressively in research and development. The tech industry is evolving very fast, and most of the R&D efforts of the companies are focused on the latest technologies like AI, Cloud Computing, IoT, and machine learning. These are the main technologies driving sweeping changes industry wide. During the pandemic, businesses' reliance on digital and cloud technologies grew very fast, leading to a boost in revenue for the cloud players, including Google, Microsoft, and Amazon.

Apart from the higher competition in the tech industry, there are other factors, too, like the focus on user experience and the demand for high-quality products and services that are making brands like Google devote more resources to research and development. However, Google's business model rests on innovation, which decides its growth and popularity. So, the company has made **technological innovation** a central pillar of its business strategy.

Growth Across The Mobile Segment

The mobile segment of consumers is now attracting more focus of the tech brands. As the internet and smartphone usage has continued to climb worldwide, more and more users are found online from their mobile devices. Whether it is for online shopping, entertainment, or social media, people stick to their mobile phone screens longer than ever. The mobile segment's consumer base is growing very fast, and mobile advertising is now driving a significant part of the revenue for the tech giants like Google and Facebook. Google has a strong presence in the mobile segment, mainly because of its Android operating system used on the largest number of smartphones worldwide. The Android user base is growing, and so are Google's revenues from the Android-based services, including sales of apps in Google Play.

Google is consistently growing its focus on mobile users since they are now the largest part of its consumer base. Apart from its assistant, Google also introduced several more apps like its Photo app to drive higher Google Products usage on smartphones. In other areas, too, Google's focus on smartphone users or mobile customers has increased over the past few years. The number of smartphone users is expected to reach 3.8 billion by 2021. This denotes a sizable increase in the user base of mobile apps and can be highly profitable for Google in terms of mobile advertising and sales of apps on Google Play. According to Statcounter, Android enjoys around 74.43% market share in smartphone OS, followed by Apple's iOS. Based on these factors, Google is in the best position to exploit the opportunities generated by smartphone users' growing base.

Diversification Strategy of Google

Google's core source of revenue is digital advertising. However, over time, the company has also continued to diversify its revenue sources by acquiring new businesses or creating new channels of growth. While Google's dependence on advertising revenue has not reduced substantially, the company has still cemented its position in the digital advertising and cloud industries. As already discussed, the company follows the strategy of building or acquiring to grow its user base and diversification. Android, YouTube, Double Click, and some other services of Google were acquired from others. These are also among its leading products and services. However, they have still helped the company secure its position in the industry.

With the acquisition of YouTube, the company hacked into an entirely new segment of **social media users**. However, it seems Google is also working on diversification more actively than before. Its cloud platform has started generating significant revenue, and the annual revenue run rate reached $12 billion in the second quarter of 2020. While Google's position is not as strong as Microsoft or Amazon, it is in the third position and has acquired some impressive deals that show its position in the cloud industry continues to grow solid. Apart from that, Google has also emerged as a concrete counterweight to Amazon and Microsoft's cloud business.

Focus On Customer Experience

Among the various differentiating factors that affect the demand for a particular brand's products and services in the tech industry, one of the most important is customer experience. In the case of Google, customer experience depends on various factors, including the accessibility of its products, usability, pricing, and overall quality and efficiency. Google has always focused on user experience, which becomes clear from its Chrome browser and search engine. While Google search is the most advanced search engine, Chrome is the fastest browser of all. Focusing on innovation has also enabled Google to provide superior customer experience and grow its user base over the years. Even the search engine of Google and its other products like Gmail have evolved a lot with time. The search engine is not what it was initially and now presents more refined searches in a fraction of a second compared to years ago.

Strengthening The Brand Image

Among the several factors that affect the growth and success in the technology sector, brand image is one of the most important. Many underlying factors affect the brand image in the tech industry. Some of the leading factors that can impact brand image and reputation include product quality, innovation, user experience, and organizational culture. Google has maintained a clear focus on improving its image in the industry. Apart from the other things that matter, the company is investing in innovation to bring outstanding products that attract users more than the rivals. However, another crucial factor is Google's customer orientation. It is also known for the user-friendliness of its apps and services, which is the main reason that several of its products enjoy the largest market share in the industry..

How Google Search Engine Works

Broadly speaking, the search engine's functions can be divided into three:

1. Crawling

This is the use of special software commonly known as bots, crawlers or spiders to access information on various websites through principally three means:

- Links from other websites already in the search engine's index or gathered while crawling
- Url's/links submitted by webmasters
- Sitemaps submitted by webmasters

A bot operates from a particular physical location, akin to your web browser. It sends various requests to the web servers from which it downloads/fetches various information on new web pages, updated web pages and dead links which are all used to update it's index. As web pages are crawled, new links detected on these web pages are added to the engine's list of pages to crawl.

In the process of crawling, the engines encounter challenges in the sense that there is a trade off between minimizing the resources it spends on crawling and maintaining an up to date index. It tries to avoid re-indexing an unchanged web page while it strives to capture all changed web pages in order to keep its index always current.

2. Indexing

The search engine stores the pages its crawlers retrieve from various web pages in a massive index database. It sorts this information based on search terms and arranges it in alphabetical order. This sorting enables rapid retrieval of documents from the index when search queries demand. It processes the words in the web pages noting the location of the keywords within the pages e.g. title tags, alt attributes. The engines cannot process the content of some rich media files or dynamic pages. To improve search performance, the search engine does not index common words called “stop words” (such as the, is, on, or, of, how, why, as well as certain single digits and single letters). These words do little to narrow a search and can safely be ignored. The indexer also ignores some punctuation and multiple spaces, in addition to converting all letters to lowercase, to improve it’s performance.

3. Search Query Processor

This is what most search users are conversant with and in fact quite often erroneously regard as the “search engine”. It comprises some components with the most visible being the search box or interface through which the search user interacts with the search engine, forwarding his search query for processing. When a user sends in a query through the interface, the index rapidly retrieves the most relevant documents for the search query. Relevance is determined algorithmically based on many ranking factors numbering over 200. A key factor amongst these is PageRank, which measures the importance of a web page by the number and the quality of links pointing to the web page. Not all links are equal as links emanating from high ranked web pages is considered more powerful than links from low ranked web pages.

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