

國立交通大學

企業管理碩士學位學程

碩士論文

網路泡沫化危機的十年之後：谷歌個案研究
10 years after the dot-com bubble:
A Case Study of Google


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中華民國一百零一年一月

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The logo of National Chiao Tung University is a circular emblem with a gear-like outer border. Inside the circle, there are stylized representations of a book, a graduation cap, and the letters 'NCTU'. The year '1956' is also visible at the bottom of the inner circle.

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Abstract

Google is a legendary company famous with its rapid growth no matter being through dot-com bubble or even in the latest global financial crisis in 2008. Google started from web search engine then online keyword advertising. Recently it even moves its step into mobile and cloud computing areas. In this research, there are not only a wide vision of Google's key success factors being discussed but a comprehensive corporate comparison among Google main competitors Yahoo! and Microsoft.

This research first gives a fundamental analysis among these three companies by comparing their products development and key milestone. Then look into the business model they have been deployed. Although it seems to have the similarity among these three internet giants, this research points out the distinction between Google and other competitors. Google's strategy is illustrated in the industry analysis section followed by overlooking each industry Google involved. It cannot leave aside the financial health of a corporate as identifying its success. We give the competitive analysis of financial comparison among Google and its competitor.

Throughout this research, we identified four major reasons which Google's success is based by using the spiral framework. We explore that Google's success is driven from being a **platform leader**, providing its eminent **technology** into its products, simple and open **user experience** and innovative **business model**. As a survivor from internet revolution, the innovation paradigm of Google could be considered as a replicable model in the sustainable technology industry.

Keyword: Google, Yahoo!, Microsoft, Business Model, Search Engine, Mobile Operating System, Cloud Computing

摘要

谷歌是一個傳奇的公司，其快速成長無論通過網路泡沫危機，甚至在最近的 2008 年全球金融危機都能安然度過且持續成長。谷歌其實是從網路搜索引擎起家的，再慢慢延伸到關鍵字廣告。近期，它甚至進入移動通訊和雲端計算領域。在本研究中，我們不僅僅是探討谷歌成功的關鍵因素，還提供谷歌的主要競爭對手--雅虎和微軟之間的一個全面的企業比較，並融入產業的分析。

本研究首先給予這三家公司基本的分析，通過比較產品開發和關鍵的里程碑，再探討其部署的商業模式。雖然這三個網路巨頭之間有著相似性，但本研究明確指出，谷歌和其他競爭對手之間的區別。本研究從谷歌所涉及的產業，分析其獲利模式。一個企業的成功並不能單單以其財務狀況而所定奪。而是要分析其與競爭對手間財務的競爭力分析。

在本研究中，谷歌的成功我們使用螺旋框架的基礎，闡明了四個主要的原因。我們發覺，谷歌的成功是重視其平台領先--提供了卓越的技術及介面簡單的產品，開放的用戶體驗和創新的商業模式也是成功因素之一。作為一個網路大變命的生存者，谷歌創新的經營模式，可以作為其他技術產業持續發展的複製模型。

關鍵字：谷歌、雅虎、微軟、商業模式、搜尋引擎、行動裝置作業系統、雲端運算

謝詞

在寫此謝詞的當下，意味著學業即將告一段落，即將展開全新的職業生涯。在交大 **GMBA** 學習的日子裡，是我生命中一段充實且特別的回憶。回想起碩一課業滿檔，那時還正值懷老二，除了課業還有中研院的實習(台北、嘉義中正大學)，台北、嘉義、新竹三地開會討論，挺著大肚子三地當天來回，時常邊孕吐邊搭高鐵，這些點點滴滴都彷彿還是昨天。

論文能夠順利完成，首先要感謝我的指導教授 劉芬美老師，對我論文傾囊相授，每每給予我最寶貴的建議，是我論文完成的最大推手。回想起我還在苦思論文題目時，劉老師花了整個下午在辦公室跟我討論，論文的架構得以呈現。雖然論文撰寫的途中，因為自己及母親的健康因素，論文中斷數次，也因為劉老師的體諒與鼓舞，讓我後來論文在接續上能順利完成；書審與口試期間，感謝 陳美芳教授、黃仕斌教授提供許多寶貴的意見，使本論文更臻完善。

論文撰寫期間，感謝同學 Susan、Allen Hsu、及 Athena，不斷的鼓勵我，也分享許多口試的寶貴經驗給我，讓我能克服口試壓力，順利地完成學業前最重要的一步。

最後，感謝最疼愛我的父母及先生，母親忍受化療的痛苦還不斷地鼓勵我完成論文，以及沒有我先生志東的體諒，幫忙我照顧兩位年幼的寶貝女兒及時時刻刻肯定我、鼓勵我、協助我生活大大小小的事，真的無法順利畢業。誠摯的感謝你們！

Penny 倍菁

中華民國一〇一年二月八日 於竹北

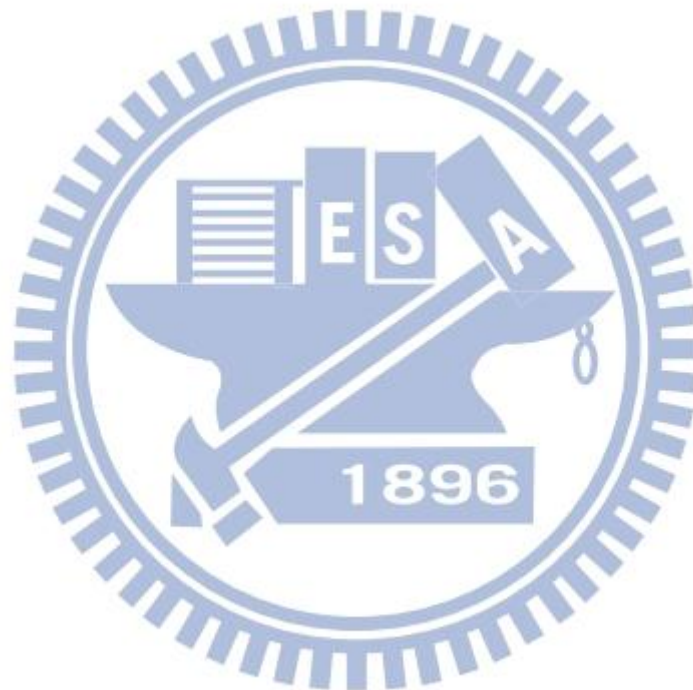
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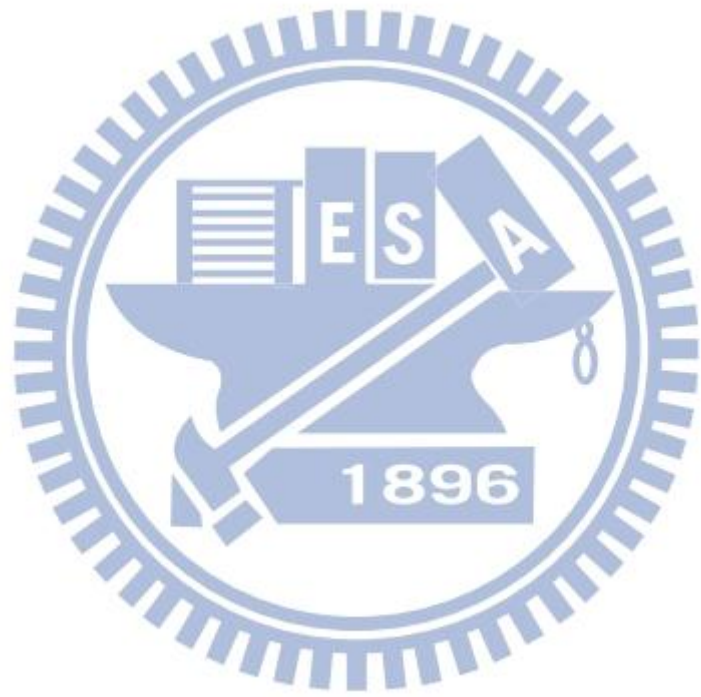
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I. Introduction



Source: Daryl Cagle, MSNBC.com. Image from <http://uksbsguy.com/blogs/doverton/archive/2008/02/05/microsoft-and-yahoo-merger-with-google-cartoons.aspx>

1.1. Issue and Research Purpose

It has been ten years after the dot-com crash. In the mid to late 1990s, the internet market had grown rapidly. Many startup tech firms birthed weekly and claimed they had potential high growth in the future in order to gain more investors' trust. On 10 March 2000, the Nasdaq Index was spiked, the dot-com bubble burst. Many of those high tech firms did not survive in the burst; however, some even grow significantly such as Amazon, eBay, Google, and Yahoo!. Ten years later, the new technologies are still quickly adopted from the public, as Nintendo exposed its highly-sensitive motion controller, Wii, the new era of home video console, and broadband internet growing rapidly, so does the smart phone. New services such as Facebook and Twitter create the power of social network. Apple's products are good example of the revolutionary devices which combine the internet activity and entertainment from desktop to hand-hold.

Is there another boom after the dot-com bubble?

No matter what will happen -- there will be another boom or not, those corporations which can survive in both dot-com bubble and the 2008 Global Financial Crisis, for sure, must be creating their competitive advantage and sustaining superior performance. Google is very special case of internet related companies which can survive in the dot-com bubble and having higher growth in the Global Financial Crisis by comparing its main competitor, Yahoo! Inc and Microsoft.



Figure 1: Stock prices comparison: Google, Yahoo!, and Microsoft. Source: Morningstar

Google's General Counsel, David Drummond, had pointed out four factors as the key to Google's success: technology, business model innovation, brand, and user experience.

- A. *Technology*. Google is famous by its excellent search engine technology – page ranking, which is adopted in some portal website -- Yahoo! Japan is switching to Google's search engine in 2010 from the Yahoo! Inc. technology currently used and deploy Google's online advertising and distribution system, while only remaining its current user interface. Furthermore, Google is also a purpose-built hardware company. Now it operates the world's largest distributed computer system.
- B. *Business Model Innovation*. Google's revenue is mainly from advertising service. By being honest to search result, the paid advertise is displayed in the right column. This also reinforces user experience. Most users feel they can efficiently get what they want from the search result. In contrast, the fail case of Yahoo! paid inclusion program which guaranteed that the commercial websites were listings on the Yahoo! search engine after payment. At the end of 2009, the program ended up with the unhappy users complaining about the

paid advertisement being indistinguishable from search results

- C. *Brand*. Google has been the number one most recognized worldwide brand. Indeed, Google now has become a verb ("If you don't know what it is, just google it and then you will get the answer") which is the huge incentive of the company to maintain the strength of its mark. In 2010, Interbrand had released

+	Rank	Previous Rank	Brand	Country of Origin	Sector	Brand Value (\$m)	Change in Brand Value
+	1	1		United States	Beverages	70,452	2%
+	2	2		United States	Business Services	64,727	7%
+	3	3		United States	Computer Software	60,895	7%
+	4	7		United States	Internet Services	43,557	36%
+	5	4		United States	Diversified	42,808	-10%
+	6	6		United States	Restaurants	33,578	4%
+	7	9		United States	Electronics	32,015	4%
+	8	5		Finland	Electronics	29,495	-15%
+	9	10		United States	Media	28,731	1%
+	10	11		United States	Electronics	26,867	12%

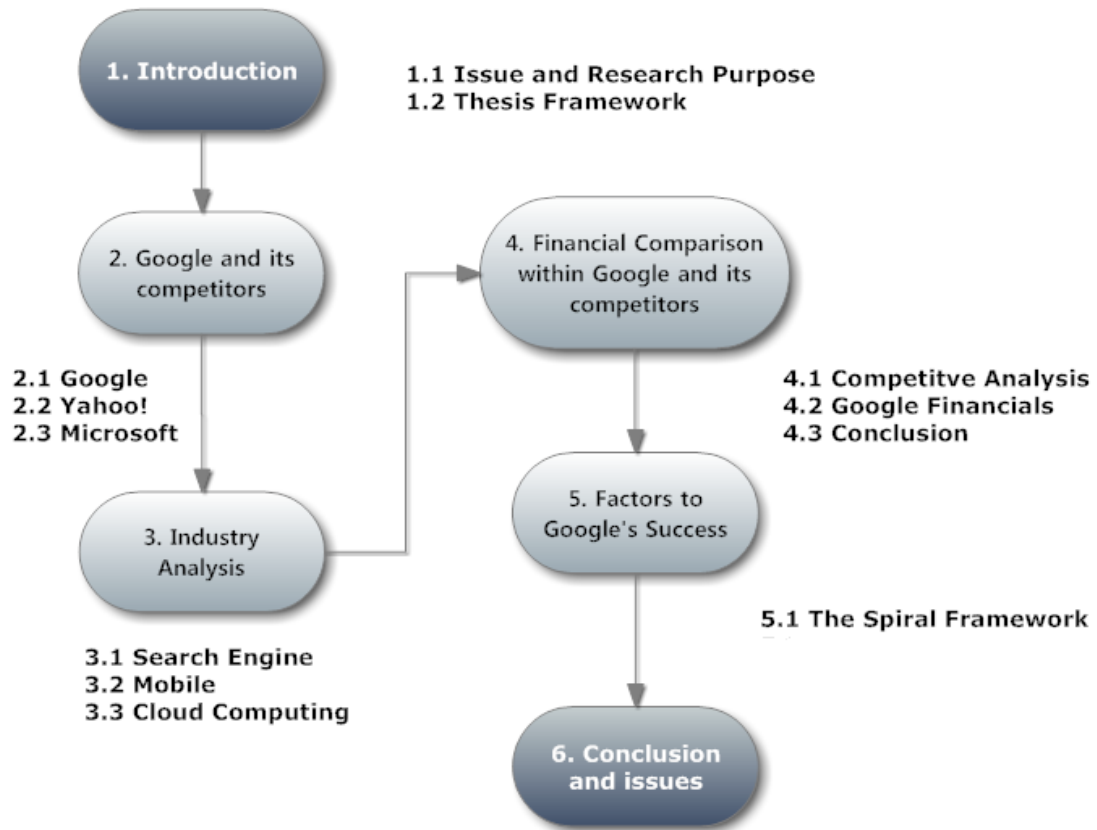
Figure 2: 2010 Top 10 company ranking. Source from Interbrand.com 2010

its 2010 ranking of the world's best global brands. Google is second-fastest gainer, moving from 7 to 4 with a 36% rise in brand value.

- D. *Focus On The User Experience*. Product decisions at Google are driven by optimizing for the user experience first and for revenue second. Most Google products are now still free to public. Google firmly believe that the better the user experience, the more easily money will follow

So summing up the points that have made Google so flourishing is their work ethic, their speedily adapt ability, their philosophy, their aggressive posture with regard to acquiring business which they think increase the value of their core services, and even more importantly offering an excellent service to its customers. Recently Google has devoted itself into the mobile and the cloud computing area since 2005. The Cloud Computing revolution is said to be the future trend. Therefore, many IT Giants want to enter this cloud computing battle. So the purpose of this research is to discover Google's superior performance based on its core value, the future growth, and comparing with its main competitors, Yahoo! and Microsoft.

1.2. Thesis Framework



II. Google and Its Competitors

2.1 Google

Google invested in Internet search, cloud computing, and advertising technologies. Google is eminent for its search engine technology. Rather than its competitors such as Yahoo! acting as an Internet portal, Google's traditional interface is much simpler. Furthermore, Google generates its primary profit from advertising related to Internet search through its AdWords program. It also devotes itself to Internet-based services and products that is now purported to be the new era of cloud computing.

2.1.1. When did the company start?

Since its incorporation in 1998, Google has become probably the most flourishing internet company, because of its online search engine technology that lots of professionals think is more advanced than other offerings by looking at the competition. Started with a research project by two Stanford Ph.D. students, Larry Page and Sergey Brin, Google has become a significant part of the way information is found nowadays. As opposed to most conventional search engines which are filled their websites with lots of banner ads or unpleasant pop-up advertisements, Google carries an incredibly neat and simple user interface. *See Figure 1*



Figure 3: Google interface. Source: the author

Despite its simplicity, Google is able to provide instant and accurate information in the order of relevance. Behind the scene lies an intelligent search engine powered

by PageRank and a crawler that unceasingly collects web pages and build indices.

Probably the most significant alterations that Google has brought to the Internet planet would be a boost of online advertising. Its focus on the quality of links, for instance, it supports search engine optimization strategies for corporations throughout the world, while its AdWords tool is also a significant paid search advertising provider. In order to survive in online industry, businesses now must ensure that they are visible on Google than on any other search engine, in order to drive more visitors and potential customers to their websites.

2.1.2. Products and key milestones

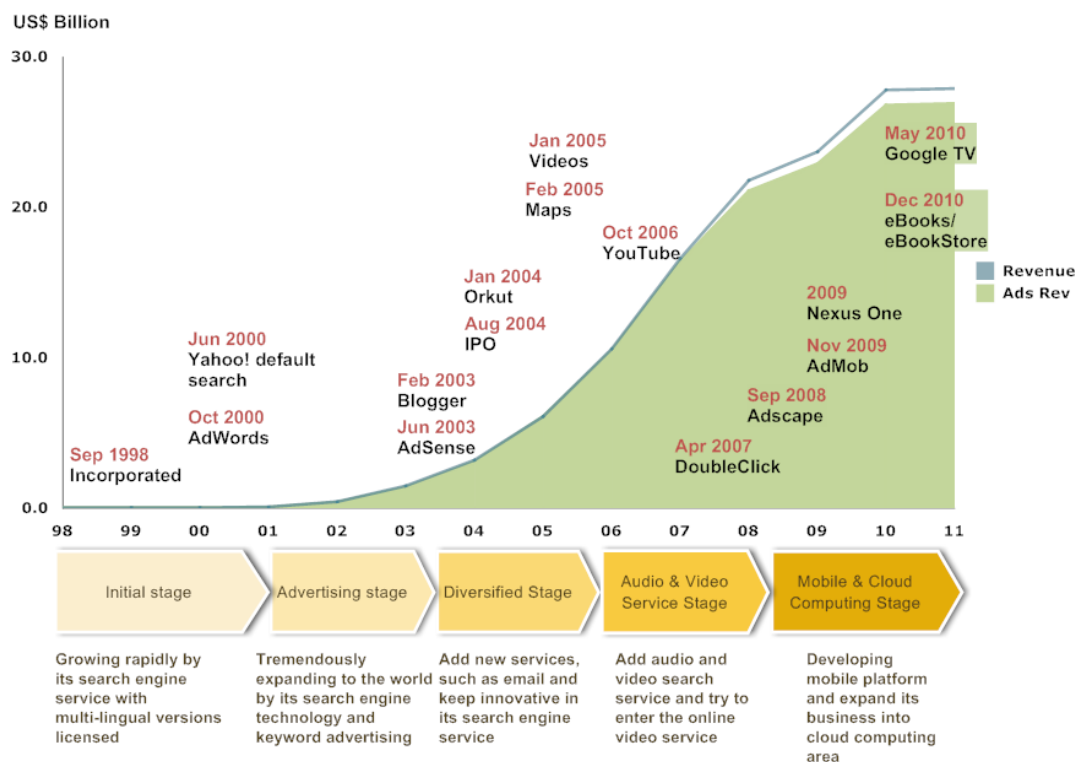


Figure 4: Google key milestones. Source: From the author. Extension to the data from MIC 2007

Google’s success hinges on the philosophy of “focus on the user and all else will follow.” It provides innovative and quality services for free to attract traffic, such as **Google Search** and **Google Apps**, which includes a suite of cloud-based messaging and collaboration applications like Gmail, Calendar, Documents, Spreadsheets and more.

Since Google was founded, it had tried to keep its mission—to organize the world’s

information and make it universally accessible and useful. Google launched numerous innovative services and products in the last decade of its short corporate history. We divided Google history into five stages and summarized its service offerings and products in the next paragraphs.

In the **Initial Stage**, from 1998 to 2000, the main service from Google is search engine and it gain its fame from its tremendous growth. From most people's impression, when they think about Google, search engine is immediately coming to their mind. In this stage, Google grew rapidly by its search engine service with multi-lingual versions licensed. Google revolutionized the search engines with their PageRank technology. Google maintains an index of Websites and other online contents with its Crawler algorithm, and makes this information freely accessible to everyone in the Internet. Comparing to keyword-oriented design of conventional search engines, Google's PageRank evaluates websites' relevance or importance based on their popularity, by the number of pages in a website and the number of links that exited to that website. In 1999, besides Search Engine, Google started to sell the advertisement related to search keyword. It offered pay-per-click of the advertising keyword; however, this pay-per-click advertising was patented by Overture Services which were later bought by Yahoo! Inc. This case was settled down with Yahoo! by issuing the share of Google common stock to Yahoo!. In 2001, Yahoo! adopted Google as its main search engine.

From the perspective of advertisers, Google seeks opportunities to enlarge size of advertisers group and diversify types of ads. Started in October 2000, **AdWords**, Google's flagship advertising product and main source of revenue, offers pay-per-click advertising, and site-targeted advertising for text, banner, and rich-media ads. In the **Advertising Stage**, from 2001 to 2003, Google has grown enormously with its search engine technology and keyword advertising. Google offers advertising solutions through its AdWords and AdSense programs. Google AdWords integrates with its search engine technology to produce highly targeted ads.



Figure 5: a) On a Google results page, ads from the AdWords program are called sponsored links, b) On other web pages, ads come from the AdSense program and get the label, "Ads by Google."

Google AdSense is an advertising program that was launched in the middle of 2003. It performs as an intermediary between advertisers and website publishers. Advertisers sign up with Google and create text ads that they would like to be displayed. Google displays these ads on the results pages of searches that people conduct from Google.com. AdSense also lets website publishers to provide Google search to their site users, while getting pay by clicking Google ads as displayed on the search results pages. For most people's curiosity of how does Google make money, it is solved by Google's revenue is generated through advertisements placed on websites that subscribed themselves to their AdSense programs.

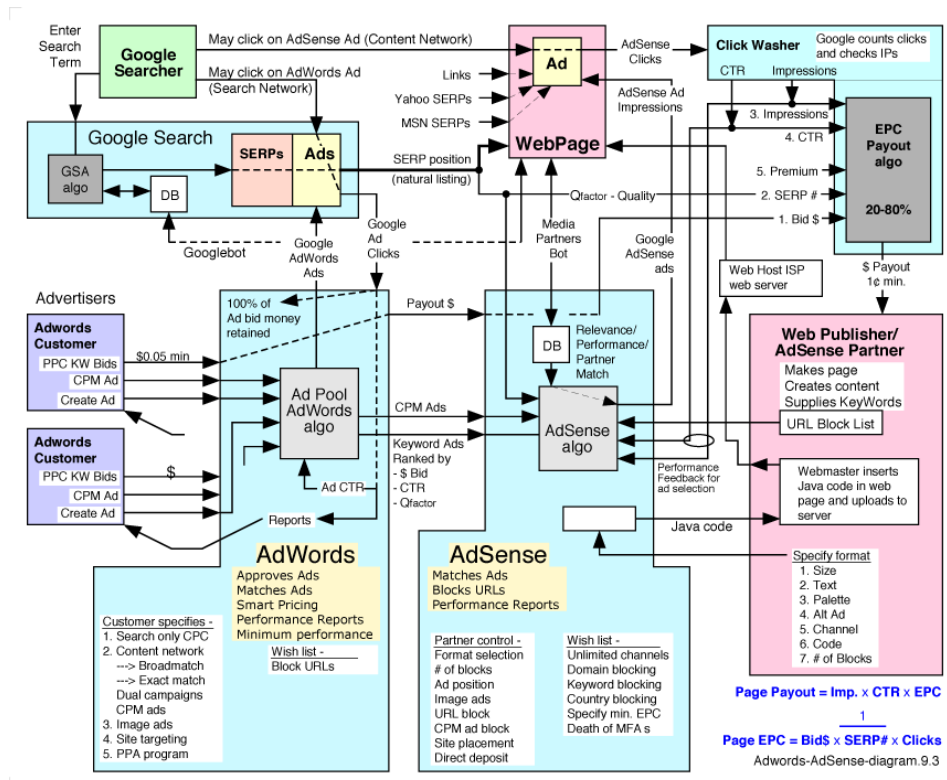


Figure 6: Google's Framework of AdWords and AdSense. Source: Money How Today website. <http://www.moneyhowtoday.com/index.php/how-to-make-money/google-adsense-a-forecast-of-the-future/>

Blogger is a free blog publishing service which allows users to publish their written article in time-stamped format and on Feb 2003 it was acquired by Google. Google Search Engine is a tool for finding new places to visit on the Web, and Blogger is a tool for recording those visits entries retrieved by Google in the user database.

In the **Diversified Stage**, from 2004 to 2005, Google started to diversify beyond its core search engine. The company ran an astonishing speed in acquisitions and mergers to acquire technology, market, and talents. In the year of 2010 alone, Google made 48 acquisitions, which is a pace of merging almost a company a week (Efrati 2011). High profile acquisitions since its IPO in 2004 include online video pioneers YouTube, bought for \$1.65 billion in stock in 2006, and the controversial acquisition of online ad service DoubleClick for \$3.1 billion in 2007. The DoubleClick deal gave Google a large network of advertisers and Web publishers to serve and sell ads to, and it boosts the search giant's "display advertising" business, which lagged rival Yahoo!'s.

What's more, Google quickly expanded into more than just a search engine. Google Mail, for example, became a serious rival to Microsoft's Hotmail following its launch in 2004, while the Google Earth and Maps services have transformed the way people see their world and search for directions.

For Google, whose Internet search business is facing new threats from social networking sites like Facebook and smart phone powers like Apple, acquisitions are important for grabbing expertise or customers in important markets.

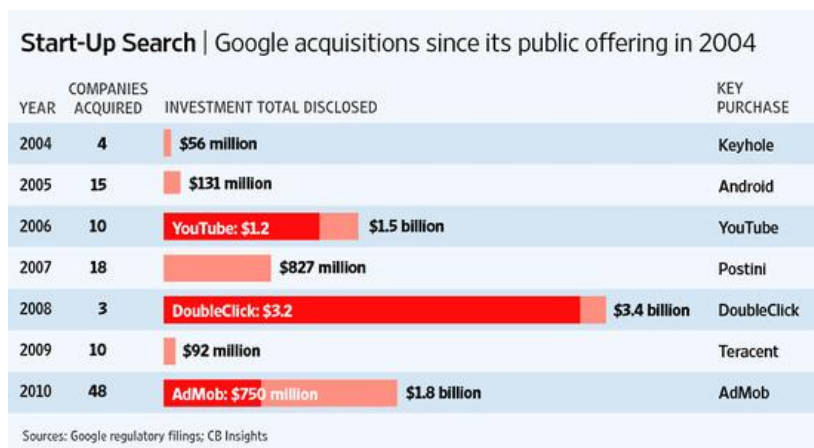


Figure 7: Google acquisitions. Source from CB Insights.

In the **Audio and Video Service Stage**, from 2005 to 2008, Google added audio and video search services and try to enter the online video service. **Google Videos**, first launched on January 2005, allows users to embed the selected videos remotely through Google Videos without worrying the storage capacity or the bandwidth issue. For those users to upload their videos to Google Videos Servers, it does require a registered account to do so, which was cancelled in 2006 since Google bought former competitor **YouTube** and Google Videos becomes a pure video search service.

By acquiring **Adscape Media**, on Feb 2007, Google extends its platform to in-game advertising which is an area where we believe Google could add a lot of value to users, advertisers and publishers

In the **Mobile and Cloud Computing** stage, from 2009 through 2011, Google diversified its business to cover the mobile, cloud computing, and TV platforms.



Figure 8: Google cloud service. Source from: techno-pulse.com

"In what could be a key move in its nascent wireless strategy, Google has quietly acquired startup Android Inc."(Elgin 2005). This future star boosts Google's collection of expertise and technological innovation that connect with this significant segment. "Wireless is the next frontier in search," says Scott Ellison, analyst at research outfit IDC.

Google has been working to make its products and services more attractive to those who access the internet through cellular phones as well as other mobile devices. In April, Google launched its Google Local Search for mobile users. Also in the same month, it introduced Google Short Message Service (SMS), which delivers text-based information to mobile users searching for anything from driving directions to weather forecasts.

In May 2005, Google acquired Dodgeball, a mobile social-networking service. Users can send a text message to their group of friends by using a wireless device, announcing that they will be at a certain location. Additionally, users could be informed if friends of their group are inside a specific neighborhood. Dodgeball project was dismissed by Google in 2009 and replacing it with Google **Latitude**.

Google acquired **AdMob**, a mobile ad platform that has been especially popular on the iPhone, for \$750 million on November 2009.

According to a forecast from IMS Research, there will be an installed base of 140 million Android portable devices, smartphones and tablets combined, by the end of 2011. The release of Google's Android 3.0 operating system for tablets, known as

Honeycomb, along with enhancements to the Android Market website, will help the growth of Android (Clarke 2011).

Google, in alliance with Sony, Intel, and Logitech, developed a new smart TV platform called Google TV. Announced in May 2010, Google TV is a seamless integration of TV, web, apps, and search engine. It took Internet TV a step forward by adding on smart features of search and application execution capability and gives users an easy and fast way to navigate to television channels, websites, apps, shows and movies.

2.1.3. Business Model

"Google's business model is not based on free software. Their business model is based on advertisements from which they make a lot of money," said by Bill Gates¹.



Figure 9: Google's Business Model. Source from MIC, Oct 2007

Google's revenue are contributed by three parts: Google Website Advertising Revenue, Google Network Advertising Revenue, and Licensing and other revenue. From Hoover's Company Records, it shows that in 2009, Google generates revenue primarily by delivering online advertising. Online advertising contributed to 97% of its total revenue - 66% of revenues from Google websites, 31% of revenues from Google Networks Members' websites. Only 3% is from licensing and other revenue.

¹The Financial Express. "Google's biz is not based on free software." Dec 2005. From <http://www.financialexpress.com/news/googles-biz-is-not-based-on-free-software/43660>

We present Google key milestones of services and products launches so do acquisitions by explaining how to maximize the scope of three elements of the two-sided market. A two-sided market is made up of a *platform* and two user groups—*users* and *advertisers* (faberNovel 2008). There are lots of instances of markets engaging two groups of agents attaching through 'platforms', and where one group benefiting from joining a platform depends on the number of agents from the other group who join the same platform.

2.1.1. Google Website Advertising Revenue:

Google's main revenues basically are from its **AdWords** and **AdSense** programs which help Google to get paid from the advertisers. From above Figure 8, we see Google acting as a service platform and the individual users are attracted to use search engine service to do keyword search. Its **AdWords** program let the advertisers to select the business related words or phrases as keywords and when people search on Google by those keywords, then the corresponding advertisement would appear next to search result. The advertisers bid for keywords and set daily budgets such as cost per click (CPC.) Moreover, the cost of advertisement may be charged differently due to the click-through rate or the ad relevance to the keywords. Due to Google's PageRank technology, it helps to find the result fast and accurately, which attracts more and more users to use its search engine.

2.1.2. Google Network Advertising Revenue:

This revenue type is built on the Google **AdSense** program in which the advertisement is placed in the web publishers' websites for free (but first the web publishers need to enroll into the program) and it helps them to earn revenue by attracting users to click the advertisement in their web pages. In **AdSense**, the advertisement is not only in text format but also in a graphic or even video type. For those small companies or start-ups, they only need to pay very little or even none in advance, and will get charged once the advertisement has been clicked.

2.1.3. Licensing and other Revenues:

This part is mainly driven by the licensing search technology and search solutions for other corporates, such as Anti-virus company to use Google's fast and accurate search solution to hit virus pattern. However, this type revenue is only taken 3% of its revenue. How about those Google softwares or operating system? They are mainly free for user. Even for the top handset operating system, Android, it is

Linux based, an open source nature, Google does not make money from licensing the operating system the way that Microsoft does. Instead of licensing Mobile OS, Google actually earns its revenue from Android Applications although Google only gets 30% of the revenue, the 70% is actually distributed to the programmer which creates the application. Apple gives its programmers 70 percent, too, and Research in Motion offers Blackberry programmers 80 percent. (Shankland, 2008²)

As we mentioned, Google's 97% revenue is from the advertising. However, the system which made Google rich was pioneered by Overture which later bought by Yahoo. The patent infringement lawsuit Overture made to Google was about the implementation in Google search engine which consists of linking text-ads to user query result. Google and Yahoo are adopting similar business model, their main revenue from online advertising. How does Google become the internet giant? Does it have any robust strategy or outstanding business model towards its current leading figure? In Chapter 5, we will discuss the key successful factors of Google

2.1.4. Patent War

It is very normal in the industry to fight for intellectual property especially to curb its rivals. Once Google expands its open strategy into mobile OS – Android system, Microsoft has kept being each other's throat with Google.

- Google vs. Microsoft:
Android was originally set up for free to use. However, after the infringement lawsuit made by Microsoft, Android is not free anymore. For every Android device installed it needs to be charged \$15 license fee to Microsoft and Apple which also curbs the Android partners such as HTC and Samsung to produce Android device. It is ironic to say that Microsoft benefits not from its own product but the profit from the Android's growth. In 2011, Google's reaction to the patent war according to its Android OS is the acquisition of Motorola Mobility which takes about \$12.5 billion U.S. dollars. Google believes this acquisition would help its mobile ecosystem and to make up the gap of its sparse mobile patents.

² Shankland, Stephen. (2008). Coders get 70 percent of Android Market Revenue, from http://news.cnet.com/8301-1035_3-10072682-94.html

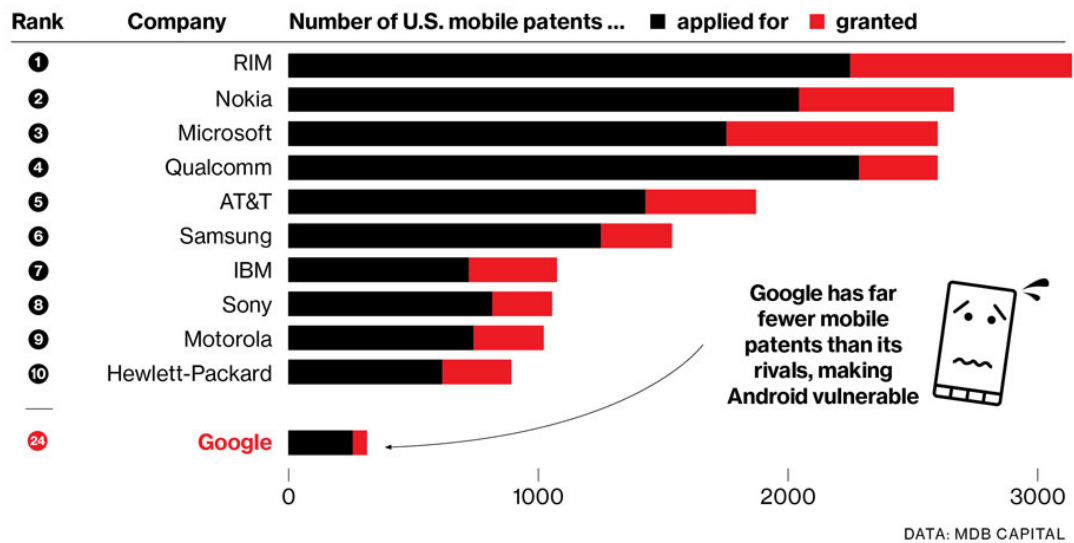


Figure 10: Number of U.S. mobile patents. Source from BusinessWeek, 2011.

- Google vs. Yahoo:
Google's AdWords, the linking text-ads, was accused of the patent infringement to Overture. Overture was later bought by Yahoo in 2003 with \$1.63 billion dollars. In 2004, Google and Yahoo announced that they have resolved the contentious issues according to the terms of the agreement so Google will license U.S. Patent No. 6,269,361 and several related patents.

2.2 Yahoo!

Yahoo! is a global internet, communication, and e-commerce company which is well known as an internet portal website and its business model is to perform value creation activities to maximum its long run profitability in the internet industry. It has since developed into a major internet brand with search, content verticals, along with other web services. After the dot-com bubble, Yahoo! realized that to rely on the main revenue source from advertising infers greater risk. Therefore, it started to transform its business type from technical company to media company which providing various services to the public.

2.2.1. When did the company start?

Yahoo! was founded by Jerry Yang and David Filo in 1994 when they were Electrical Engineering graduate students at Stanford University. Their initial project, David and Jerry's Guide to the World Wide Web, was a directory of other web sites, organized in a hierarchy, as opposed to a searchable index of pages. In 1994, "Jerry's Guide to the World Wide Web" was renamed "Yahoo!." Yahoo! Directory was Yahoo!'s first offering which is significantly dropped now and gradually replaced by Yahoo! search engine. Like many search engines and web directories, Yahoo! diversified into a Web portal company. Yahoo! also provides several famous services: Yahoo! Mail, Yahoo! News, Yahoo! Finance, Yahoo! Map, Yahoo! Video, and other social media websites.

Yahoo! made a lot of acquisitions to increase its products and services quality as well as growth of corporations worldwide. Yahoo! has made in excess of 50 acquisitions since its entry into the world. Some of the most distinctive are:



	Yahoo! Important Acquisitions		
	acquired company	result product	deal price
October 8, 1997	Four 11 (Rocketmail)	Yahoo Mail	\$92,000,000
April 1, 1999	Broadcast.com	LaunchCase	\$5,700,000,000
May 28, 1999	GeoCities	Yahoo GeoCities	\$3,600,000,000
December 23	Inktomi	Yahoo Search	\$235,000,000
June 14, 2003	Overture	Yahoo Search Marketing	\$1,630,000,000
December 12, 2005	Del.icio.us	delicious.com	\$20,000,000
February 12, 2008	Video on Demand	Yahoo Video	\$160,000,000

Figure 11: Yahoo! Acquisitions. Source: from the author. Data from Yahoo!

2.2.2. Product and Key Milestones

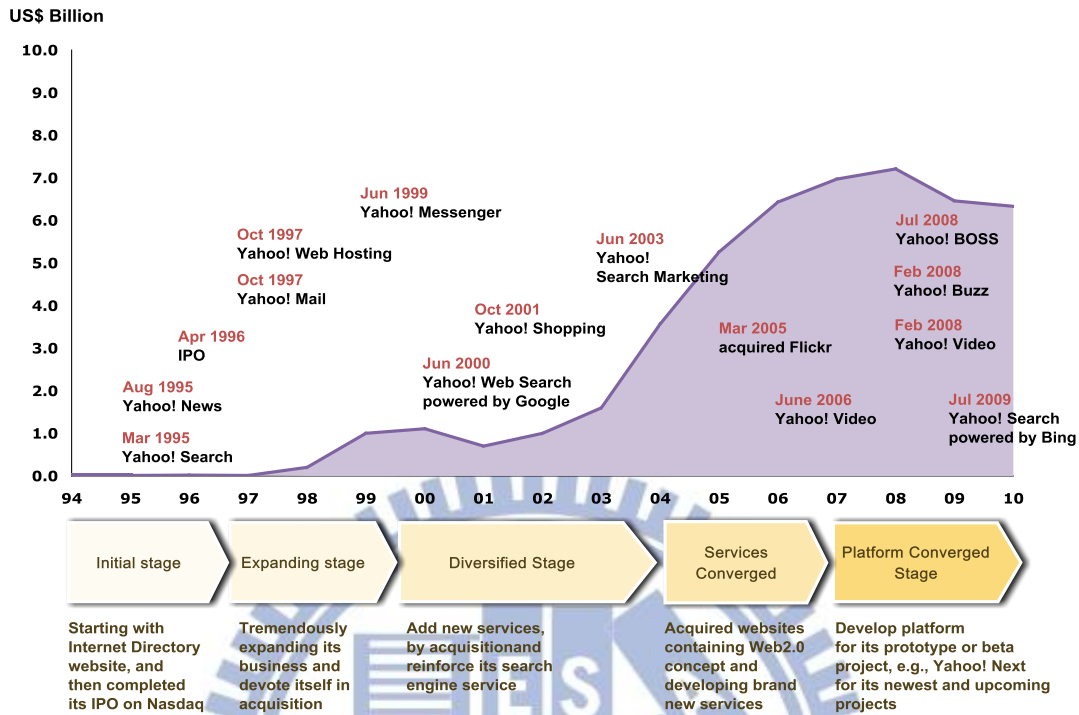


Figure 12: Yahoo! key milestones. Source from the author. Extension to the data from MIC 2007

From MIC 2007 report, "The Development Model Analysis of Yahoo!", it divides Yahoo! development into five major stages. The Initial Stage is from 1994 to 1996 and it provided the web directory service organized in a hierarchy and a searchable index of pages. In 1995, Yahoo launched Yahoo News. Yahoo! News is an internet-based news aggregator which features top stories, world, business, entertainment, health, most popular, and local news. In April 2009, according to Nielsen/NetRatings, Yahoo! News ranked second among global news sites in U.S. users, after msnbc.com and ahead of CNN. In 1996, Yahoo! became a public traded company at this stage.

The second stage is the Expanding Stage which is from 1997 to 1999. Within this period, Yahoo! rapidly expanding its business not only from acquiring other websites but also moved its business from search engine to portal website. By realizing the theorem of the longer the users linger, the more business it will generate. Yahoo! was looking for user attraction on the portal page. In 1997, it launched Yahoo! Mail and Yahoo! Web Hosting. Yahoo! Web Hosting offers users a domain name,

unlimited web hosting space, ecommerce web hosting, design tools to create a web site easily. In 2005, it integrated with Yahoo! Small Business! to continue its service with small business users. Yahoo! Mail was introduced in 1997 by acquired Four11's Rocketmail. Yahoo! Mail keeps improving its mail service due to the competition within mail service providers such as MSN Hotmail, AOL Mail, and Google's Gmail. It is the only web-based email that offers unlimited storage for all users.

The third stage is the Diversified Stage which is from 2000 to 2003. Yahoo! was encountering the dot-com bubble burst which resulted in its stock price dropped from its all-time high of \$118.75 a share on 3 January 2000 to all-time low of \$8.11. In order to focus more on its portal business, Yahoo! made more acquisitions and forged alliances with other websites such as adopting Google to be its search engine in 2000. Just like Google's AdWords and AdSense, in 2003 Yahoo! provided its internet advertising service called Yahoo! Search Marketing which is a keyword-based feature of Pay per click (PPC) and sponsored search.

The fourth stage is the Services Converged Stage which is from 2004 to 2006. According to the threat from Google, Yahoo! devoted to email services and Messenger, which provided user chat through text or voice. It kept making more acquisitions to expand its service categories such as Flickr, blo.gs, and Upcoming.org then converged on the brand-new services, **Yahoo! Music** and **Yahoo! 360™**.

The fifth stage is the Platform Converged Stage which is from 2007 until now. After launching Yahoo! Search Marketing that allows different businesses to advertise their products and services on the Yahoo! Network, Yahoo! launched its new Internet advertisement sales system in 2007, called **Panama** which allowed advertisers to bid for search terms based on their popularity to display their ads on search results. Also it created a platform for its prototype or beta projects, called **Yahoo! Next**, containing forums for Yahoo! users to give feedback to assist its future project development. In the same year, Yahoo! changed its mail service to unlimited mail storage. Yahoo has a paid inclusion program called Yahoo Search Submit that allows advertisers put their site into the natural search results. Yahoo's Search Submit program generally hurts Yahoo's search results, because it forces Yahoo search technology to be more biased towards on-page criteria. This program was dropped in 2009.

If we break Yahoo! services into categories, there are four types of them: Search,

E-Commerce, Entertainment, and Communication.

- Search: Yahoo! Search Engine, Yahoo! Knowledge, Jobs
- E-Commerce: Yahoo! Shopping, Autos, Travel
- Entertainment: Horoscopes, Games, Movies, Shine (social media aimed at women), Yahoo omg! (entertainment news and celebrity news)
- Communication: Messenger

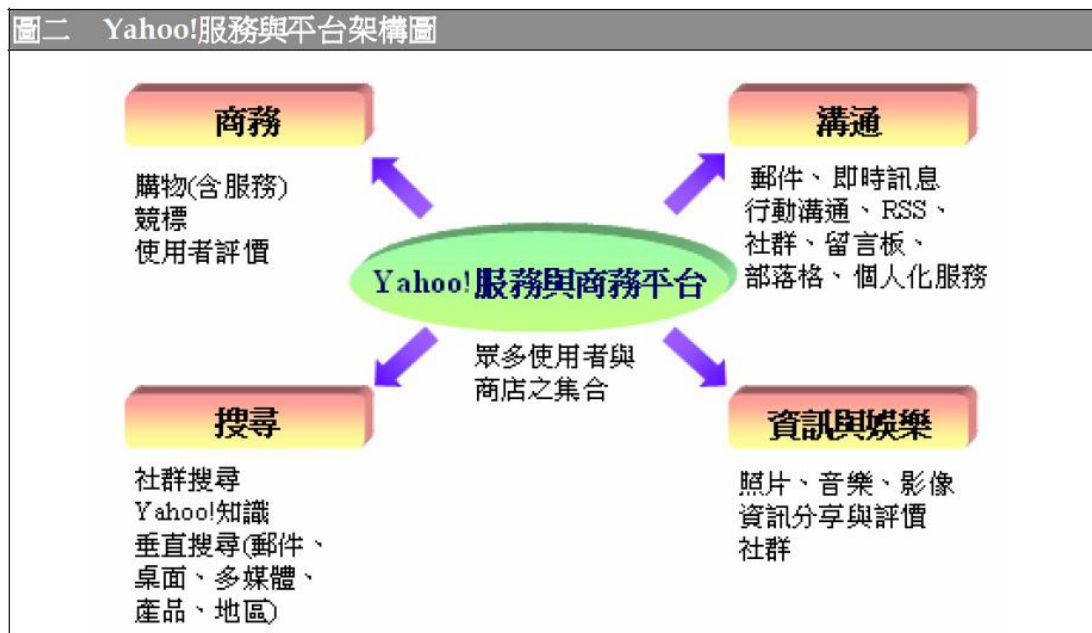


Figure 13: Yahoo! Services into categories. Source from MIC 2007.

2.2.3. Business Model

Besides online advertising, Yahoo's other revenues are more service and commerce oriented. From 2010 Yahoo 10-k reports, it divided its revenue into 2 types:

- Display and Search Revenue:
 - A. The "Display Revenue" is from the display of graphical advertisement. According to Yahoo 10-k, this is selling the "impression" of the advertiser's company. This "impression" advertisement on Yahoo! Properties and Affiliate sites are usually have terms of up to one year and for some special cases, the terms may extend up to three years.
 - B. The "Search Revenue" is from the display of text-based links to advertiser's website. This is similar to Google's revenue model. In contrast of "Display Revenue", the "Search Revenue" is recognized based on "click-throughs." In 2009, Microsoft and Yahoo had the Search Agreement, and Microsoft will

acquire a 10-year exclusive license to Yahoo's search technologies. In other words, Yahoo's search engine will be outsourced by Bing. Under this agreement, Microsoft needs to pay traffic acquisition cost (TAC) to Yahoo that is based on 88% search revenue.

- Other Revenue.

Other revenue includes listings-based services revenue, transaction revenue, and fees revenue.

- Listings-based services revenue is generated from a variety of consumer and business listings-based services, including classified advertising such as Yahoo! Autos. The listings-based services revenue is recognized when the services are performed.
- Transaction revenue is generated from facilitating commercial transactions through Yahoo! Properties, principally from Yahoo! Small Business, Yahoo! Travel, and Yahoo! Shopping. The transaction revenue is recognized when qualified transactions have occurred (for example, when travel arrangements are booked through Yahoo! Travel).
- Fees revenue consists of revenue generated from a variety of consumer and business fee-based services, including Internet broadband services, royalties received from joint venture partners, and premium mail, as well as services for small businesses.

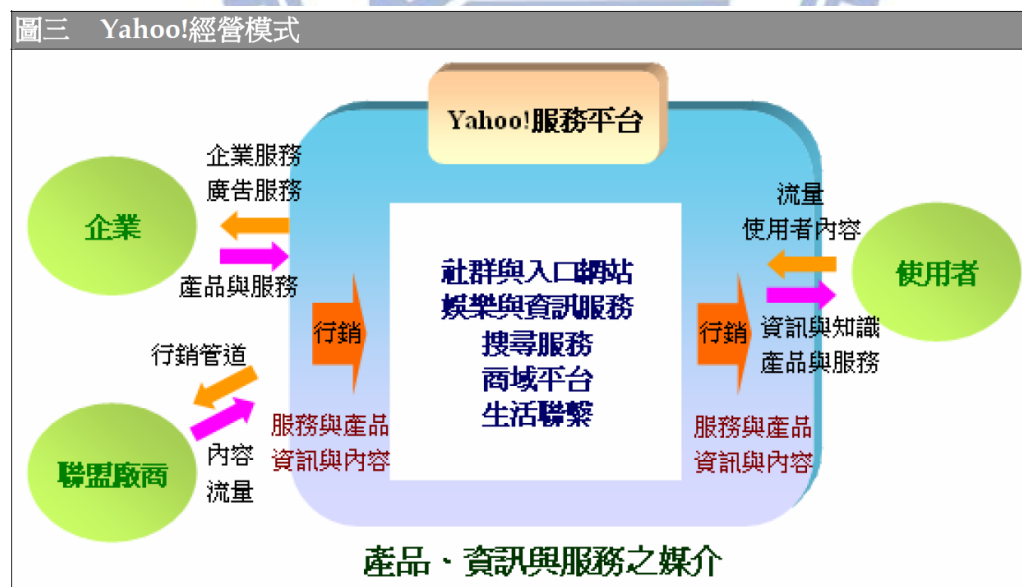


Figure 14: Yahoo's business model. Source from MIC 2007.

Comparing With Google:

Although both Google and Yahoo adopt online advertising as their main revenue source, however the biggest difference of business model between them is that Yahoo does crowd sourcing toward its main page or its Properties and try to attract its users linger more. On the other hand, Google does the opposite thing. It does crowd sourcing toward its advertiser's page and try to minimize the time they linger on Google's page such as Google search engine. However, Google's strategy works better due to it win the user's experience more such as its users feel they are easily find what they want in shorter time.

2.3 Microsoft

Microsoft, best known for its Windows operating system (OS) and Office business productivity tools, played a commanding role in the PC software industry and has changed how people work in the last three decades. Its operating software had driven 93% of the world's desktop computers during 1990s and until now it is still the most popular operating system for home desktop use.³ Besides the window operating system, the Office suite of business productivity tools dominates 90% of the market and contributes \$9 billion annually, a third of the company's revenue. (Schlender 1995). In recent years, the company has diversified into various product categories, such as video game industry with XBOX, consumer electronics with Zune, and Mobile Phone OS

2.3.1. When did the company start?

Co-founded by Bill Gates and Paul Allen in 1975, Microsoft has reigning the desktop computer software market in the last three decades, started with MS-DOS in the mid-1980s, followed by the Windows line of operating systems and Office suite in the 1990s. Like most start-ups, Microsoft began small, but with a huge vision—A personal computer in every home running Microsoft software⁴. It has now grown to be tremendously successful. As of 2011, Microsoft has a global annual revenue of US\$ 69.94 billion and over 90,000 full time employees. It develops, manufactures, licenses, and supports a wide range of software products for computing devices

³ 'Key dates in the antitrust investigation of Microsoft Corp.' http://www.activewin.com/articles/general/1/article_71.shtml. Retrieved on 2011/11/2

⁴ A History of Windows. <http://windows.microsoft.com/en-US/windows/history> retrieved on 2011/10/25

2.3.2. Product and Key Milestone

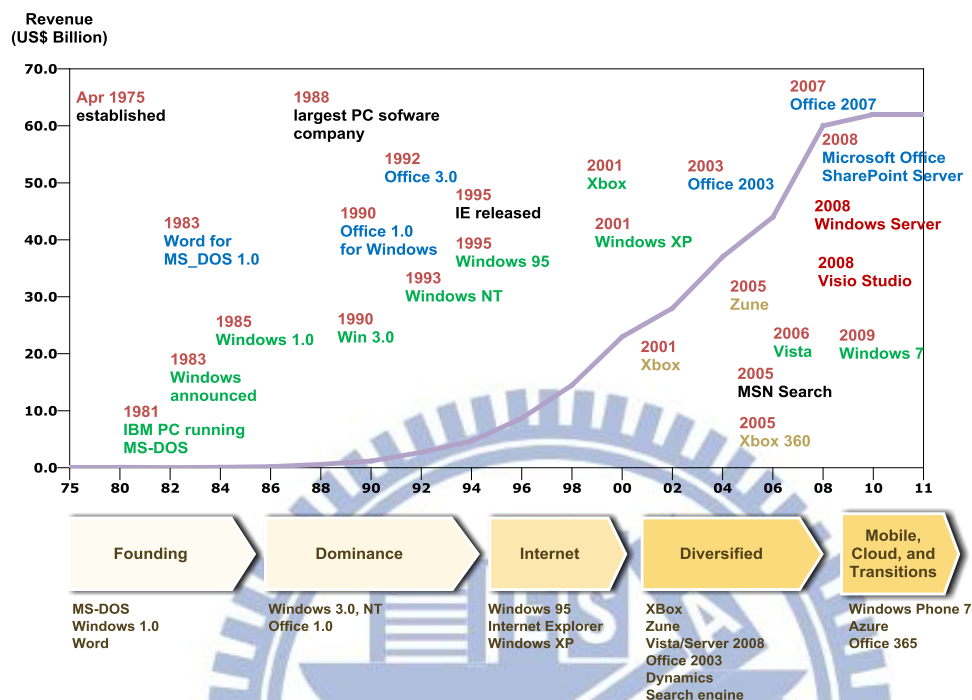


Figure 15: Microsoft key milestones. Source: from the author.

Let's look at its initial product. Founded in 1975 and started with developing BASIC interpreter for MITS Altair 8800, Microsoft dominated the desktop computer operating system market with MS-DOS, and later, the Windows line of operating systems. The history of Microsoft Windows began with IBM PC running MS-DOS in 1981. The first Windows version, 1.0, released in 1985, is an add-on to MS-DOS in response to the growing interest in graphical user interfaces (GUIs).

Microsoft also dominated the office business productivity tool market with Microsoft Office. Originally announced in 1983 with Word for MS-DOS, Microsoft Office, announced in 1990, became full-fledged by combining Word and other inter-related office desktop application such as a spreadsheet program Excel, presentation software PowerPoint, and relational database Access. These two products paved the way to Microsoft's dominance of desktop software market in the next two decades since late 1980s. "In 1988, Microsoft becomes the world's largest PC software

company based on sales. Computers are starting to become a part of daily life for some office workers," written in the history of Windows⁵.

Windows 3.0, released in 1990, was the first Microsoft Windows version to achieve broad commercial success, 2.75 million copies sold for the year (Polsson 2011). Microsoft Office for Windows, announced in October 1990, include inter-related desktop applications, including Word, PowerPoint, Excel, Access, Outlook, and Publisher. The strategy that Microsoft offered package deals of many different applications helped solidify their market dominance which persists today. Now its Windows system, the world's most popular computer operating system, runs 9 out of every 10 computers, while more than 500 million people use its Office software to perform their daily tasks, like writing letters or sending e-mail messages⁶.

Emerged in mid-1990s, the Internet created a profound impact on culture and commerce, including the rise of near instant communication by electronic mail, text based discussion forums, and the World Wide Web. Microsoft branched from desktop into the Internet territory with Windows 95 and Internet Explorer (IE) Web browser. Windows 95 built-in Internet support, dial-up networking, and features for mobile computing, and integrated networking.

Internet Explorer (IE), released in 1995, has been the most popular Web browser since 1999, reaching a peak of about 95% usage share between 2002 and 2003 with IE5 and IE6⁷. However, its usage share has declined to 42.45% in 2011 and is gradually trending downward⁸.

Despite desktop software products and services remain the core of its business, Microsoft also possessed footholds in other markets, notably in the areas of online services, entertainment and consumer electronics. The company has diversified into the entertainment and consumer electronics market with Xbox, as well as the Zune entertainment platform. Microsoft entered the video gaming console market with the release of Xbox in 2001 (discontinued in 2006) and its successors, the Xbox 360

⁵ A History of Windows. <http://windows.microsoft.com/en-US/windows/history>. Retrieved on 2011/11/2.

⁶ "Microsoft Office hits market for business clients, tries to adjust to shifting market." Chicago Tribune. May 12, 2010. http://articles.chicagotribune.com/2010-05-12/business/sc-biz-0513-microsoft--2-0100512_1_microsoft-office-microsoft-business-division-google-docs

⁷ Internet Explorer 9 Review. <http://www.xibl.com/browsers/ie-9-review/> retrieved on 2011/11/2

⁸ Usage of the Top 5 Browsers on July 2011. StatCounter. <http://gs.statcounter.com/#browser-ww-monthly-201107-201107-bar>

(launched in 2005) and Xbox Live which allow players to compete online (discontinued in 2010).

Microsoft entered the music players market with the launch of the Zune in 2006. The Zune platform includes a portable digital media player and an entertainment platform of related products and services marketed by Microsoft, such as Zune Marketplace and Zune Social. The Zune Marketplace combines music, TV shows, movies, and music videos. The Zune Social is a service integrated with Xbox Live that allows users to share what they interest in the Zune Marketplace with their friends, and to send messages, or to compare music.

The Zune was supported to be an alternative to Apple iPod. However, the Apple iPod had already captured the major market share so that Microsoft Zune could hardly compete with Apple iPod⁹. Microsoft discontinued its iPod battle in 2011 – discontinued the Zune hardware support due to lack of demand and it did not live up to Microsoft's expectation by comparing to Apple iPod and now is shifting Zune functionalities to other devices such as Windows Phone 7 and Xbox.

To compete with Google, Microsoft released a new version of its MSN search service in 2005, and before that Microsoft relied on Yahoo's search technology¹⁰. To increase their search market revenue, in 2006, Microsoft launched the adCenter service that offers pay-per-click advertisements and established the CodePlex collaborative development site for hosting open source projects.

In 2008, Microsoft attempted to purchase Yahoo! to strengthen its position in the search engine market and it believes its collaboration would give a big chance to beat Google. Although the offer did not go through successfully, the two companies formed a Search Alliance where Yahoo! Page will still look the same, but the search results will be powered by Bing, the same way that Google syndicates its search results to AOL.

Mobile and the cloud are among the major topics being discussed at Microsoft's

⁹ Microsoft Discontinues the Zune, Latest in the History of Failed Products. From Yahoo! News. <http://news.yahoo.com/microsoft-discontinues-zune-latest-history-failed-products-20110315-151500-019.html>

¹⁰ Microsoft Spotlights Its Search Engine--After two years in development, redesigned search service is set to launch. By Juan Carlos Perez, IDG News, Feb 1, 2005 9:00 pm. http://www.pcworld.com/article/119512/microsoft_spotlights_its_search_engine.html

2011 Developer Conference. In mobile area, Microsoft has cultivated for quite long time through Windows CE for embedded systems, such as hand-held devices, appliances and cars, and eventually, Windows Mobile. In 2010, Microsoft announced Windows Phone 7 to replace its market-shrinking Windows Mobile OS.

In February 2011, Microsoft announced a Partnership with Nokia in which Windows Phone 7 would turn into the primary smartphone operating system for Nokia. The partnership facilitates integration, especially search engine and applications, and competition with Google's Android and Apple's iOS. Microsoft Bing would also power search through Nokia devices, and Nokia's application store being integrated with the Windows Phone Marketplace.

Office 365, Windows Azure, and Windows (Phone) 7 together are Microsoft's main stream products to dominate cloud computing (Knorr 2010). Expected to be released the final form in 2011, Microsoft Office 365, replacing Business Productivity Online Services (BPOS), includes Microsoft Office suite of desktop applications and hosted versions of Microsoft's Server products (including Exchange Server, SharePoint Server, and Lync Server), delivered and accessed over the Internet¹¹. By replacing BPOS and adding in Office Web Apps, Microsoft finally is set to compete with Google Apps and make a push for more enterprise customers.

Windows Azure, announced in 2008 at the Microsoft Professional Developers Conference, became generally available in February 2010. Positioned in the PaaS tier, Microsoft is promoting cloud-based application development on its Azure platform and making a push for customers to migrate existing server applications to Azure.

At the time Windows 7 was released in October 2009, laptops are outselling desktop PCs. By the fall of 2010, Windows 7 becomes the fastest-selling operating system in history, selling seven copies a second, which announced in the official Window Team Blog¹². Windows 7 creates new ways to work with windows and enables users to use fingers to browse the Web, open files, flip photos, stream music, videos, and photos from PC to a stereo or TV.

¹¹ Microsoft Office 365
http://www.microsoft.com/en-us/office365/what-is-office365.aspx#fbid=Kh1_VZp84VE

¹² 150 Million Licenses of Windows 7 Sold, Windows Live Betas Announced.
<http://windowsteamblog.com/windows/b/bloggingwindows/archive/2010/06/23/150-million-licenses-of-windows-7-sold-windows-live-betas-announced.aspx>
retrieved on 2011/11/12

Windows Live, as shown in Figure 14, offers free online services for e-mail, instant messaging, Office, photos, movies, and social networking, allows users to keep in touch from their desktop, mobile, or the Web, extending Windows to the Cloud platform. Window 7 and Windows Live combined opens the door for personal cloud life.

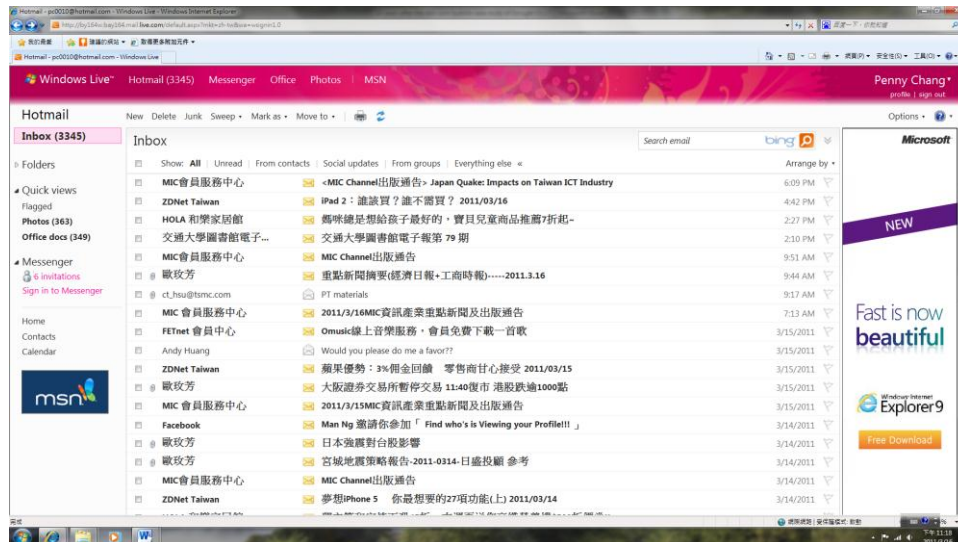


Figure 16: Windows Live Hotmail. Source from the author.



Figure 17: Microsoft products in categories. Source from Microsoft.

2.3.3. Business Model

Unlike Google and Yahoo which are in the Internet Information Provider Industry, Microsoft which is in the Application Software industry is mainly selling software so that the revenue model is different from Google and Yahoo.

Microsoft's core product is its Window Operating System. In the past, the consumers need to purchase separately for the Operating System. However, it encounters the illegal copy issue severely especially in mainland China. Recently Microsoft has come out the solutions by cutting down the selling price of the software, licensing for schools, or providing academic discounts on Microsoft software. Moreover, it collaborates with PC / notebook OEM to bundle its OS. Besides going for the legal action, Microsoft improves its illegal copy detection technology by checking the software validation while the users online and Microsoft even claims that it is impossible to use the illegal copy starting from Window Vista.

Microsoft generates its revenue by developing, manufacturing, licensing, and supporting a wide range of software products and services for many different types of computing devices. Starting from 2010, it claims in its 2010 annual report that its commitment to cloud computing. For its "cloud-based" service and product, it claims its cloud revenue generated primarily from usage fee and advertising.

Microsoft generates revenues through five business divisions:

- A. Microsoft business division (30.6% of the total segment revenues in FY2010),
- B. Windows & Windows Live (28.7%),
- C. Server and tools (24%),
- D. Entertainment and devices (13.1%) and
- E. Online services (3.6%).

Its main revenue is from licensing its software. Its online services consists of online information offering (such as Bing, MSN portals and channels, as well as an online advertising platform which are Yahoo and Google's main revenue source) occupied the less of its total revenue.

Comparing with Google:

Since Web 2.0 comes out, Microsoft which has got the severe impact for that. Tim O'Reilly described the characters of Web 2.0 which also tells why Google is one of the winners from Web 2.0¹³:

- 1) The Web As Platform
- 2) Harnessing Collective Intelligence
- 3) Data is the Next Intel Inside
- 4) End of the Software Release Cycle
- 5) Lightweight Programming Models
- 6) Software Above the Level of a Single Device
- 7) Rice User Experience

Google keeps providing free tools or software to the customer such as Google Docs and Android (Linux based operating system which is an open source OS). Microsoft has been under attack from those free alternatives. Finally Microsoft came out with a free "cloud" version of Office 2010 and it starts to think of how to compete against free and change its original business model to respond to those threats. Maybe Microsoft needs to figure the way to retain its most valuable customers rather than entering the "Free" competition.



¹³ What is Web 2.0. Design Patterns and Business Models for the Next Generation of Software. Posted on 09/30/2005. <http://oreilly.com/pub/a/web2/archive/what-is-web-20.html?page=1>

III. Industry Analysis

3.1. Search Engine Industry

A web search engine is created to seek out information on the internet; some of them even search on the FTP server. This query information may consist of web pages, images, songs, games, documents, and other types of files. Some search engines also mine data available in directories or databases. Unlike web directories, which are sustained by human programmers, search engines run algorithmically or are a combination of algorithmic and human input.

3.1.1. The History of Search Engine Development

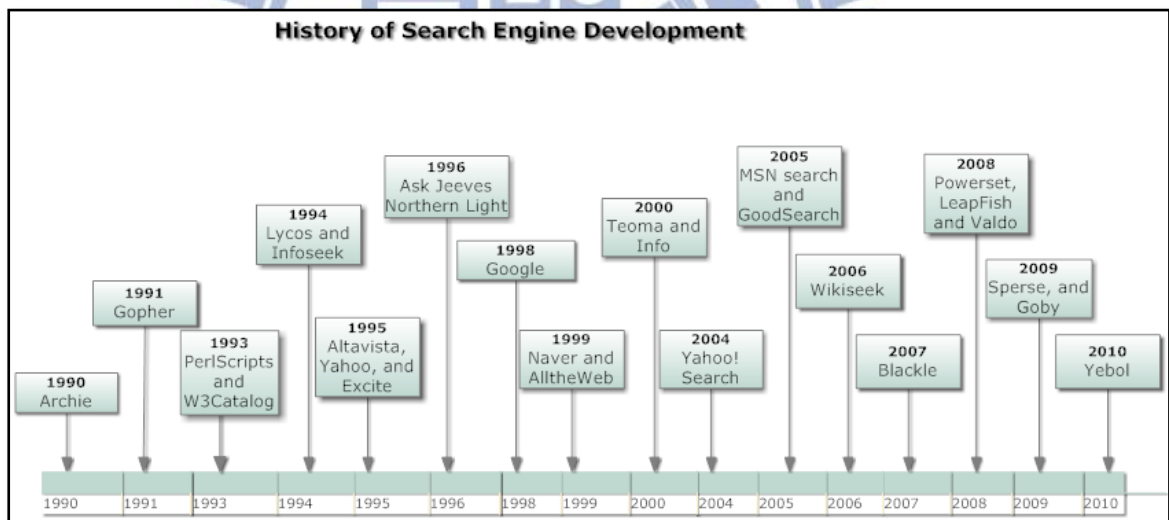


Figure 18: The history of search engine development. Source: from the author

The very first tool used for searching on the Internet was Archie. In 1990, created by Alan Emtage, a student at McGill University in Montreal, Archie was able to tell user the path of directory which he was looking for the file name. In 1991, Gopher was a menu system that simplified locating and using Internet resources. Gopher was in advance of the World Wide Web, allowed server based text files to be hierarchically organized and easily viewed by end users who accessed the server using Gopher Applications on remote computers. Lycos began as a search engine

research project by Dr. Michael Loren Mauldin of Carnegie Mellon University in 1994. Lycos then enjoyed several years of growth and, in 1999, became the most visited online destination in the world. Infoseek featured a very complex system of search modifiers, including Boolean modifiers such as the most basic "OR." AltaVista was once one of the most popular search engines but its popularity waned with the rise of Google. One key change that came with AltaVista was the inclusion of a natural language search. Users could type in a phrase or a question and get an intelligent response. For instance, "Where is London?" without getting a million-plus pages referring to "where" and "is." Yahoo! was among the most popular ways for people to find web pages of interest, but its search function operated on its web directory, rather than full-text copies of web pages. Excite is an Internet portal, and as one of the major "dot com" "portals" of the 1990s (along with Yahoo!, Lycos and Netscape), it was once one of the most recognized brands on the Internet. Ask Jeeves (Ask) was a search engine founded in 1996 by Garrett Gruener and David Warthen in Berkeley, California. The original idea behind AskJeeves was to allow users to get answers to questions posed in everyday, natural language, as well as traditional keyword searching. The current Ask.com still supports this, with added support for math, dictionary, and conversion questions. Previous keyword-based methods of ranking search results, used by many search engines would rank pages by how often the search terms occurred in the page; instead, Google analyses human-generated links, assuming that web pages linked from many important pages are themselves likely to be important. Yahoo! Search is a web search engine, owned by Yahoo! Inc. Originally, Yahoo! Search started as a web directory of other websites, organized in a hierarchy, as opposed to a searchable index of pages. In the late 1990s, Yahoo! evolved into a full-fledged portal with a search interface. Starting in 2003, besides purchasing all other search engines, Yahoo! integrated its multiple search engines and Yahoo! Search became its own web crawler-based search engine. MSN Search was a search engine by Microsoft that comprised a search engine, index, and web crawler. MSN Search first launched in the third quarter of 1998. Later it renamed as Live Search in 2004. In 2009, it became Bing. Yebol was introduced by its called "Semantic Search Engine" which announces to be a Google like search engine with "human-like" results in categories.

3.1.2. The Big Players

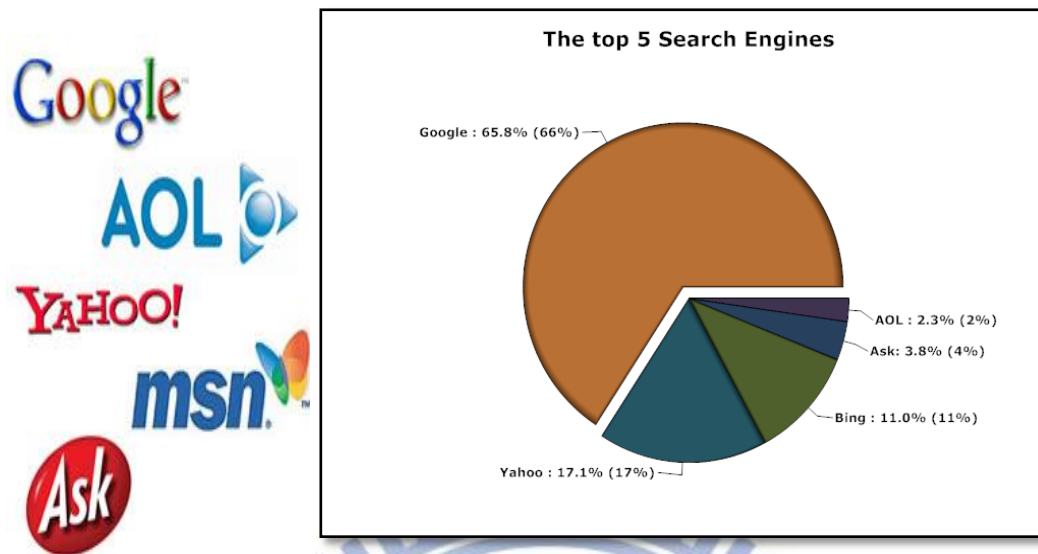


Figure 19: The top 5 search engines. Source: from the author. Data from ComScore 2010

According to ComScore 2010, Google sites led the U.S. explicit core search market in July with 65.8 percent market share, followed by Yahoo! Sites with 17.1 percent and Microsoft sites with 11.0 percent. Ask network captured 3.8 percent of explicit core searches, followed by AOL with 2.3 percent. This market share report was conducted by nearly 15.6 billion explicit core searches. From ComScore report on December 2004, Google originally was ahead of others slightly (Google with 35 percent; Yahoo with 32 percent); however, Google has grown significantly year by year which results in its major dominance in the search engine industry.

3.1.3. “Coopetition”

- *Yahoo! vs. Google:*

Coopetition is particularly common within the internet related industry. In 2003, Yahoo! purchased Overture Services, Inc., which owned the AlltheWeb and AltaVista search engines. Initially, even though Yahoo! owned multiple search engines, they didn't use them on the main yahoo.com website, but kept using Google's search engine for its results until 2003 when Yahoo! integrated all its acquired search engines with its own Yahoo! Search and came up with its own web crawler-based search engine, with a reinvented crawler called Yahoo! Slurp.

- *Yahoo! vs. Microsoft:*

In December 2009, Yahoo! gave up its search engine technology by adopting Microsoft Bing. In order to become a more formidable challenger to Google, (which Combined, Microsoft and Yahoo hold a 28 percent share of the U.S. search market, still far behind Google's 66 percent, according to comScore Inc.), Yahoo! provides its remarkable online marketing platform combining with Microsoft Bing Search technology. This alliance is now only effective in the U.S. and Canada. The international divisions will not be effective until 2012 which means that Yahoo Japan Corp. still relies on Google's search technology.

3.2. Mobile Phone

When the Apple iPhone hit the mobile world, the smartphone touch screen went into mainstream. Nowadays, the mobile phone device is not only for making and receiving a call but doing more for entertaining or for social networking. Google's ambition to enter the mobile phone market was revealed by the acquisition of Android in July 2005 in order to prosper its advertising strategy, Google Search, and other Google applications onto different devices¹⁴.

Before, the 2G (the second generation) networks were built mainly for voice services and slow data transmission, such as SMS (Short Message Service), mainly for text-based communication. The advanced step, the 2.5G, launched before entering 3G, started to provide General Packet Radio Service (GPRS), which data rate is from 56 kbit/s to 115 kbit/s, mainly used for Multimedia Messaging Service (MMS), World Wide Web access, and email. Now the mobile phone is just like a small size laptop which undoubtedly occupies a crucial part in people's life.

¹⁴ "Google Pushes Tailored Phones To Win Lucrative Ad Market". Wall Street Journal. 2007. <http://online.wsj.com/article/SB118602176520985718.html>

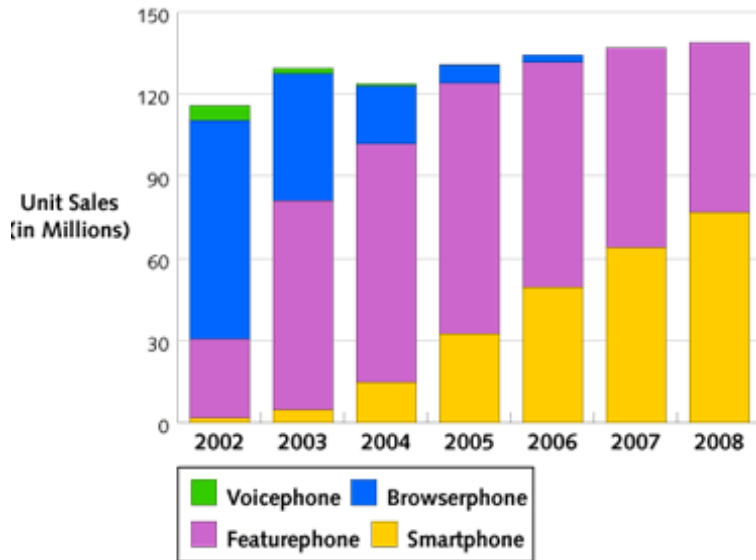


Figure 20: Mobile phone market. Source: Yankee Group, 2004

The feature phone was introduced within this stage. Not like smartphone which contains more computing ability, the feature phone is famous with its multimedia function such as embedded camera. Yankee Group revealed that in 2004 the mobile phone market was occupied mainly with the feature phone; even in 2010, the feature accounted for 70% of all mobile phone sales in the United States; however, the smart phone market was growing in a tremendous speed. From the Nielsen Research indicates in the third quarter of 2011, more smartphones will be occupied in the U.S. market than feature phones.

U.S. Smartphone Penetration & Projections

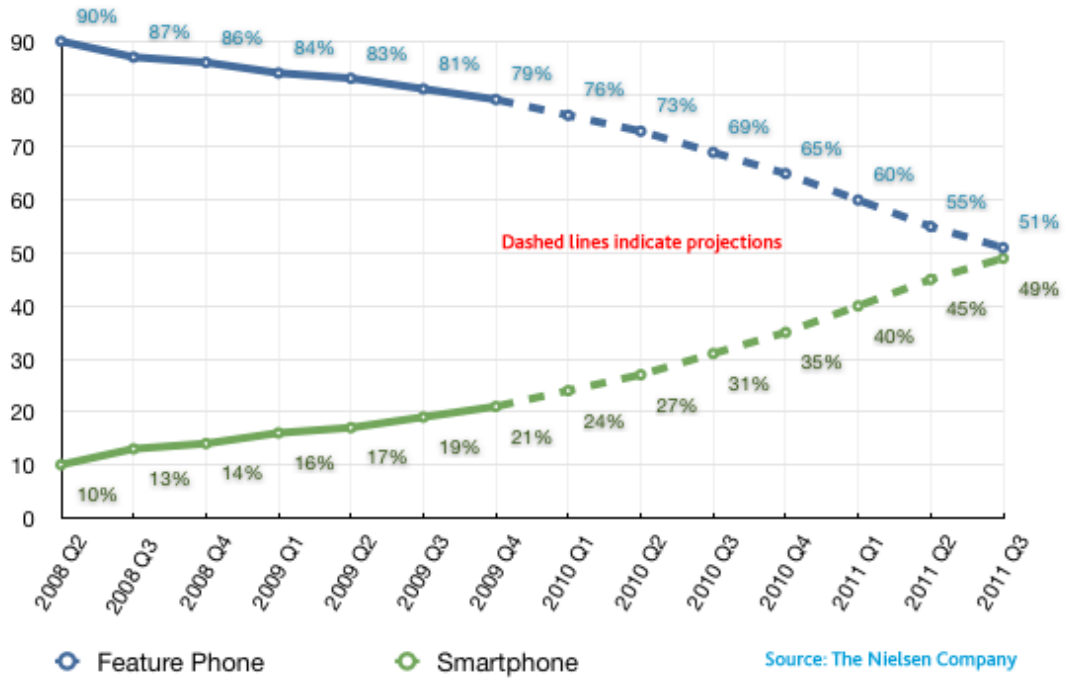
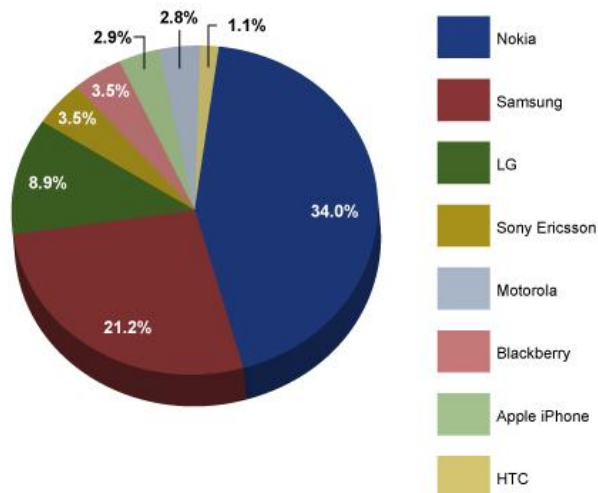


Figure 21: U.S. Smartphone Penetration and Projection. Source: The Nielsen Company 2009

From 2010 ABI Research report, the top five cell phone vendors are Nokia, Samsung, LG, Sony Ericsson, and Motorola. In order to share the big pie of this mobile phone market, the mobile platform companies have sought for any chance to enter into partnership with mobile phone device vendors.

Handset Vendor Market Share World Market: 1Q 2010



Source: ABI Research

Figure 22: Handset vendor market share 1Q 2010. Source: ABI Research

The data from Pew Research Center in 2010 indicates in the U.S. more than 50% cell phone internet users go online daily from their mobile devices. Google, Yahoo!, and Microsoft eye the big pie of online advertising through the mobile device that heats up the smartphone competition within not only the mobile application but even the smartphone OS such as Google’s Android and Microsoft Window Mobile.

More than half of cell phone internet users go online daily from their mobile device

Frequency of cell phone internet use among those who go online from a cell phone (% of adult cell phone internet users)

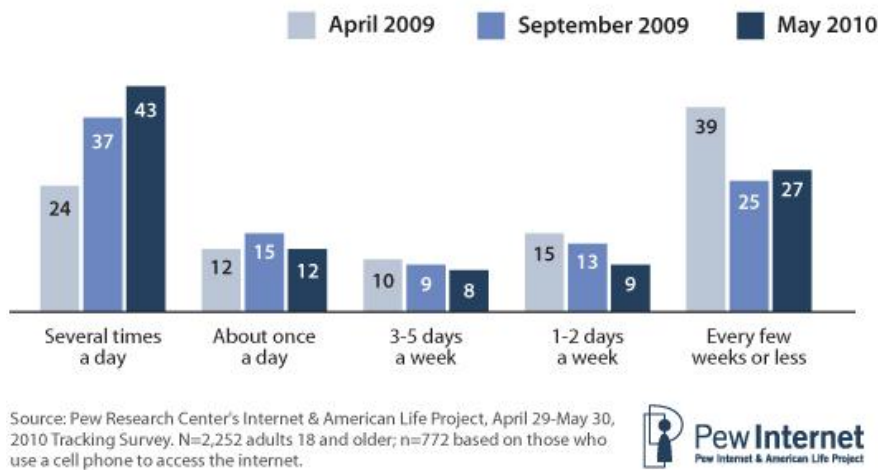


Figure 23: Survey of cell phone internet users from mobile device. Source: Pew research

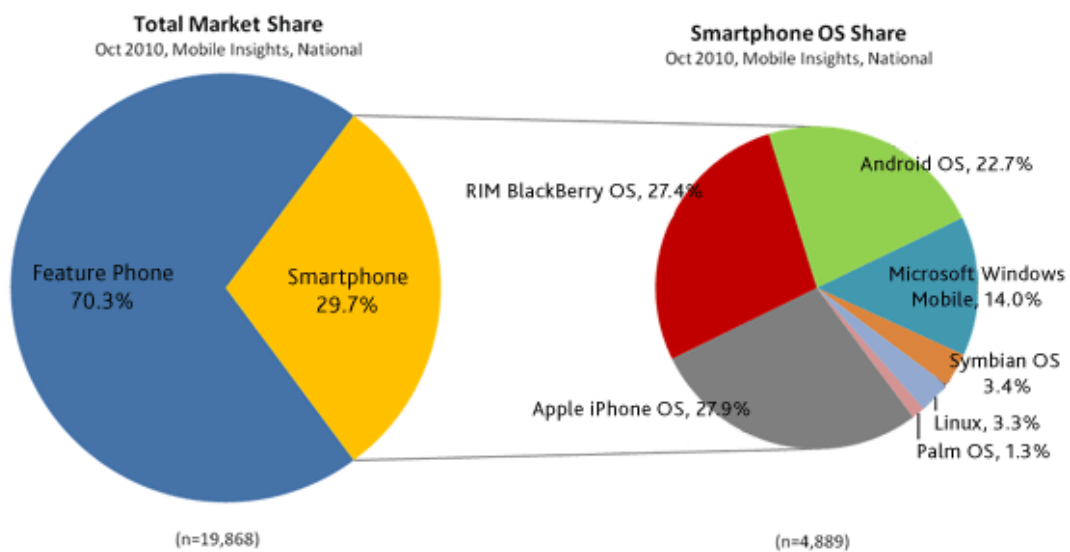
3.2.1. Mobile Operating System

Similar to the operating system for desktop or laptop such as Windows, Mac OS, and Linux, the mobile operating system (mobile OS) acts much simpler that mainly processes mobile multimedia formats, various inputs, and connectivity. The instances for using the mobile OS are personal digital assistants (PDAs), converged mobile devices (smartphones), and tablet computers such as Apple’s iPad and ViewSonic’s ViewPad. The boosting need for mobile devices has brought on rigorous competition between software giants just like Google, Microsoft, and Apple, along with mobile industry leaders Nokia, Research In Motion (RIM), and Palm, in order to capture the most significant market share pre-emptively. Apple drastically

influences the mobile industry by its launch of the iPhone in 2007, and it effectively led in a new era of smartphone operating systems which focus on touch-based interaction and user experience. This touch-based interaction also inroads the whole computer industry by blurring the need of the traditional input methods such as keyboard and mouse. Starting from Win 7 launched in 2009, Microsoft add on its new features such as advances in touch and handwriting recognition. In the same year of iPhone launched Google cooperated with 79 other hardware, software, and telecom companies to establish the Open Handset Alliance that is to preempt the smartphone market with its new Android operating system.

Total U.S. Market & Smartphone Market

October 2010



Source: The Nielsen Company

Figure 24: Total U.S. Smartphone Market Share. Source: The Nielsen Company 2010

In 2010 the Nielsen Company revealed that the top five smartphone platform players in the U.S. are Google, RIM (BlackBerry), Apple, Microsoft, and Symbian. If counted from the worldwide smartphone market, Nokia Symbian would still be the top 1 player due to its major leading in the global handset market. Especially Google's Android is growing at a strong rate, and it deserves a close attention of its future potential. Handsets with Google's Android platform overtook some part of Nokia's Symbian smartphone market share in the fourth quarter of 2010 although Symbian is still the best selling system. Nokia's market share dropped to 28.9% from 36.4% in 2009.

In the past the operating system leaders are RIM, Symbian, and Microsoft Windows

Mobile. In order to compete with recent newcomers Android and iOS, the pro-operating system leaders need to keep up with the launch of refreshed operating systems. However, the latter operating systems have taken away both mindshare and market share and helped propel the market forward. More smartphone vendors have been switched to Android because it helps them to comply with their own approach to what a smartphone experience can be. The main reasons for user choose Android are its ease of use and increasing free mobile application, comparing it to Apple iOS mainly paid applications.

3.2.2. Partnership

Except iOS and RIM OS only adopted in their own products, Android, Window, Symbian are also provided to their partnership device vendor. In 1998, Motorola was overtaken by Nokia as the world's biggest seller of mobile phone handsets. Since that, Motorola has kept losing its position in smartphone battle. In 2006 before the iPhone launched, Motorola was the second biggest mobile phone maker offered both dumbphones and smartphones. After the iPhone coming out, Motorola became number 6 in smartphones. Current Motorola smartphones are all embedded with Android system; however, from InformationWeek, it was reportedly working on Android alternative OS by hiring engineers from Adobe and Apple.

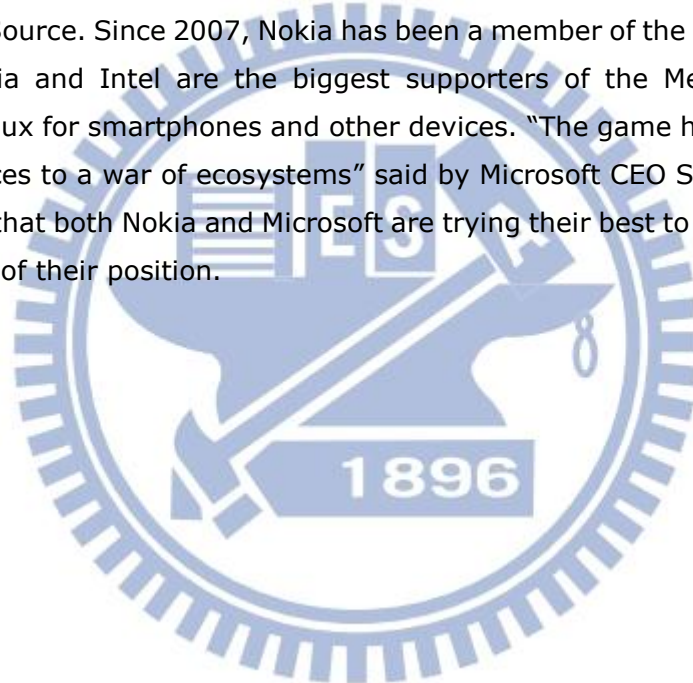
For Android market, HTC was the first mobile phone manufacturer put Android into mass production. Besides developing its own OS, bada, Samsung also provides Android based smartphone.

Vendor	2010	ch	ch	2009	OSs
Samsung	24	243%	17	7	Android, Windows, bada
HTC	25	177%	16	9	Android
Sony Ericsson	10	100%	5	5	Android, Windows
Motorola	14	100%	7	7	Android
Apple	48	92%	23	25	iOS
LG	7	75%	3	4	Android, Windows
Others	22	70%	9	13	

Nokia	100	47%	32	68	Symbian
RIM	48	30%	11	37	BlackBerry
Total	298	70%	123	175	
Share	22%	8%		14%	Of all mobile phones

Table 1: OSs adopted by vendors. Source from Ahonen 2011

From Table 1, Android system is the most popular adopted OS by smartphone vendors. On February 2011, Nokia announced its partnership with Microsoft that was interpreted to be a great move to Microsoft Window 7 Phone but a great loss as well to Open Source. Since 2007, Nokia has been a member of the Linux Foundation in which Nokia and Intel are the biggest supporters of the MeeGo project, an embedded Linux for smartphones and other devices. "The game has changed from a war of devices to a war of ecosystems" said by Microsoft CEO Steve Ballmer. We can presume that both Nokia and Microsoft are trying their best to win back the lost market share of their position.



3.3. Cloud Computing

Cloud computing is not a new technology or a new concept, but rather using and leveraging existing technology in novel ways. It is in fact, the concept probably inherited from the essence of Distributed Computing and the Grid Computing. Cloud Computing is a concept representing the computer to use the Internet to cooperate with each other or make services more far-reaching. In the realization of the "concept" of the process, it will produce a corresponding "technology." Let's explain the definition of Distributed Computing and Grid Computing.

The concept of distributed computing which put large work into small pieces and were carried out by a number of computer operations and then compile their own results back to user that compensates the incompetent work of a single computer.

Grid computing is an extension of distributed computing which main feature is to do application's integration of distributed computing through different levels of the computer, different architecture, and various platforms.

Judging from this, "cloud computing" and "grid computing" is not significantly different. Indeed, both the extension of distributed computing, only "grid computing" focuses on the integration of many heterogeneous platforms, and "cloud computing" is emphasized in the local context of limited resources, and use the Internet to access remote computing resources.

The analyst firm Gartner Inc. divided the various definitions of cloud computing into two categories: one focusing on remote access to services and computing resources provided over the Internet "cloud," and the other focusing on the use of technologies such as virtualization and automation that enable the creation and delivery of service-based computing capabilities. The first category would include "software as a service" (SaaS) applications such as CRM and Amazon's EC2 Service which offers access to storage and processing power over the internet. The second is an extension of traditional data center approaches and can be applied to entirely internal enterprise systems with no use of external off-premises capabilities provided by a third party."

According to Gartner definition, Google called "cloud computing", contains the "iGoogle", "Google Calendar", etc., although there are applied to the "cloud

technology" part, but probably mainly on the model is a "cloud services" areas.

3.3.2.1. Cloud Computing Architecture



Figure 25: Cloud Computing Architecture. Source from Edgewater Technology

Cloud computing has been the second large upheaval since 1980s the big innovation of the mainframe to the client-server side. Users neither need to understand the "cloud" in the details of the infrastructure, nor to possess the necessary professional knowledge. Because in the past "the cloud" in the figure was often used to represent the telecommunication network, and but also used as the internet and its underlying infrastructure in abstract. A typical cloud computing providers often provide a common network business applications and other software through a browser or other web service that software or data is stored on the server. Besides the above key elements of cloud computing, it also includes the personalized user experience.

Cloud computing can be considered as the following levels of services: infrastructure as a service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS).

Software as a Service (SaaS): SaaS is based on the concept of service providing, which is offered by the software providers to lease their products not purchase. The software is installed on a centralized network server to carry out its functions. This is the most popular type of cloud computing with its high flexibility, excellent service, strong scalability, and lower maintenance cost. Google Apps and Salesforce.com are the most well known SaaS providers. Also, Skype, the social communication tool

using the P2P technology, Trend Micro's cloud antivirus, YouTube, Twitter and other web applications, all belong to SaaS services. SaaS is an effective cost reduction solution, because it is much cheaper than just purchasing and installing the applications directly, usually fee charged in monthly payment for member fee (annual rent for the service) or it charges when account applied. Following this model, the SaaS users do not need to worry about the future installation or upgrade issues.

Platform as a Service (PaaS): While SaaS allows usage of cloud applications, PaaS provides developers with proprietary API's to make an application that will run in a specific environment. While a developer is free to create any application they wish, the application is locked to the platform used for its creation. This method of developing applications can be low cost (through some providers, even free) and allows you to leverage the infrastructure and tools of an already established cloud company for building or migrating your existing applications. This also gives you the ability to quickly make your application available to a wide audience. One of the simpler examples of PaaS is Facebook. Developers can create specific applications for the Facebook platform using proprietary API's and make that application available to any Facebook user. Salesforce.com's PaaS product is known as the Force.com platform which allows external developers to create customized applications that integrate back into Salesforce.com.

Infrastructure as a Service (IaaS): This is the most comprehensive cloud platform and is mainly used by full time developers or large-scale enterprise customers. IaaS gives you infrastructure for developing, running and storing your applications in cloud environments. The benefit of IaaS is the virtually limitless storage and computing power available to the developers without having any physical hardware on-site. Amazon Elastic Compute Cloud (Amazon EC2) is one of the example of IaaS, that is a web service providing resizable compute capacity in the cloud. It is designed to make web-scale computing easier for developers.

For those enterprises choose the PaaS solutions, it implies they also adopt the SaaS products provided by the same PaaS vendor. Although the PaaS vendors aim for encouraging the software development and customization on their PaaS platform, this still does not attract those companies concerning to control their own IT system architecture.

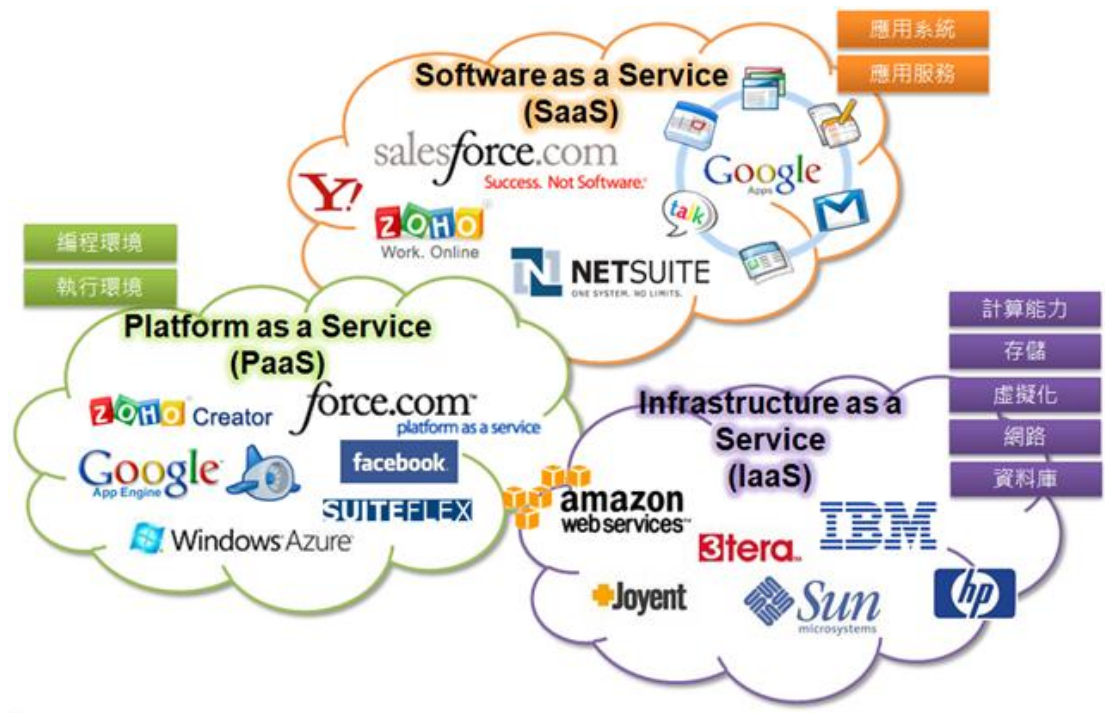


Figure 26: Software vendors in cloud computing. Source from: Yu 2010. <http://www.dotblogs.com.tw/jimmyyu/archive/2009/12/03/12275.aspx>

3.3.2.2. How to React as Being a Cloud Player?

1. Google

Google Apps is classified as SaaS product which consists of Google Docs, Messaging and Collaboration Services, Gmail, Google Talk, Google Groups, Google Calendar, and more like Blogger, and Picasa.

It is obvious that Google Docs wants to compete with Microsoft Office. Google Docs aim at the users who do not have word processing and spreadsheet installed on site and giving free for personal use. Although Google Docs attracts more casual users and still cannot replace Microsoft Office domination, it still keeps a steady growth (See Figure 26) these years by integrating Google Docs and Spreadsheets with its Gmail that facilitates growth at Docs and Spreadsheets by leveraging Gmail's growing user base.

On February 2011, Google launched its new product "Google Cloud Connect" for Microsoft Office. Google Cloud Connect is a free plugin that improves Microsoft

Office 2003, 2007 and 2010 on Windows PCs. It adds simultaneous collaboration, revision history which allows user to roll back to historical document, cloud sync which allows multi-users to collaborate the same file, unique URLs and simple sharing to the Microsoft Word, Excel and PowerPoint applications. It is ironic that Google Cloud Connect helps Office experience the power of the cloud computing.

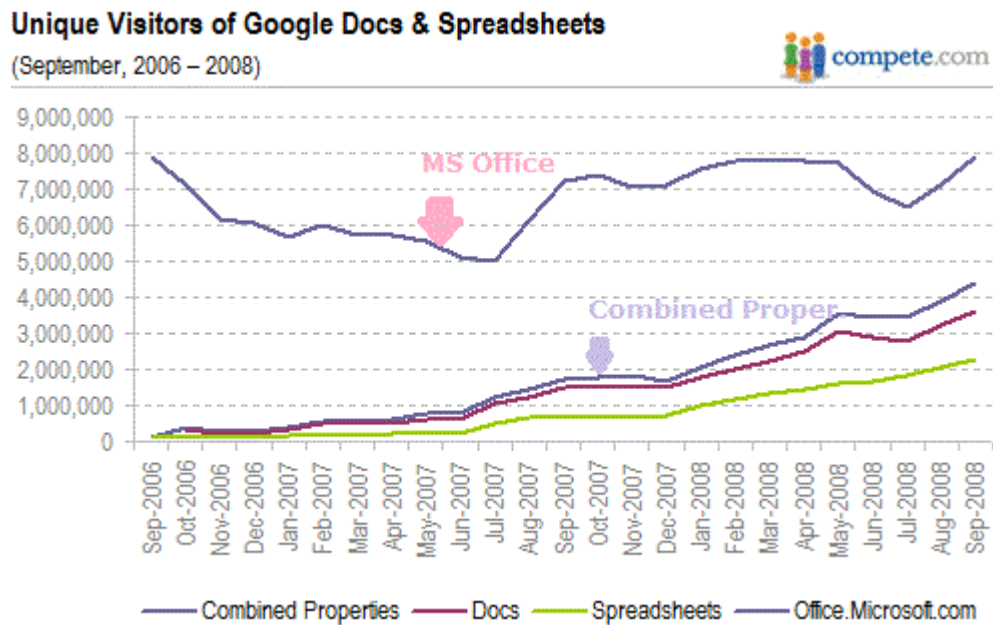


Figure 27: Unique visitors of Google Docs and Spreadsheet. Source: from compete.com 2008

Google App Engine, on the other hand, is a PaaS product which offers the developer to build applications on this highly scalable platform containing Google’s excellent computing infrastructure and database like Google File System (GFS) and Bigtable without worrying the future upgrades for software/hardware issue.

2. Microsoft

Not like Google, Microsoft has been a dominant on-premise software vendor for a long time. In order to defense for its software empire, it also propel the cloud computing along with its existing products.

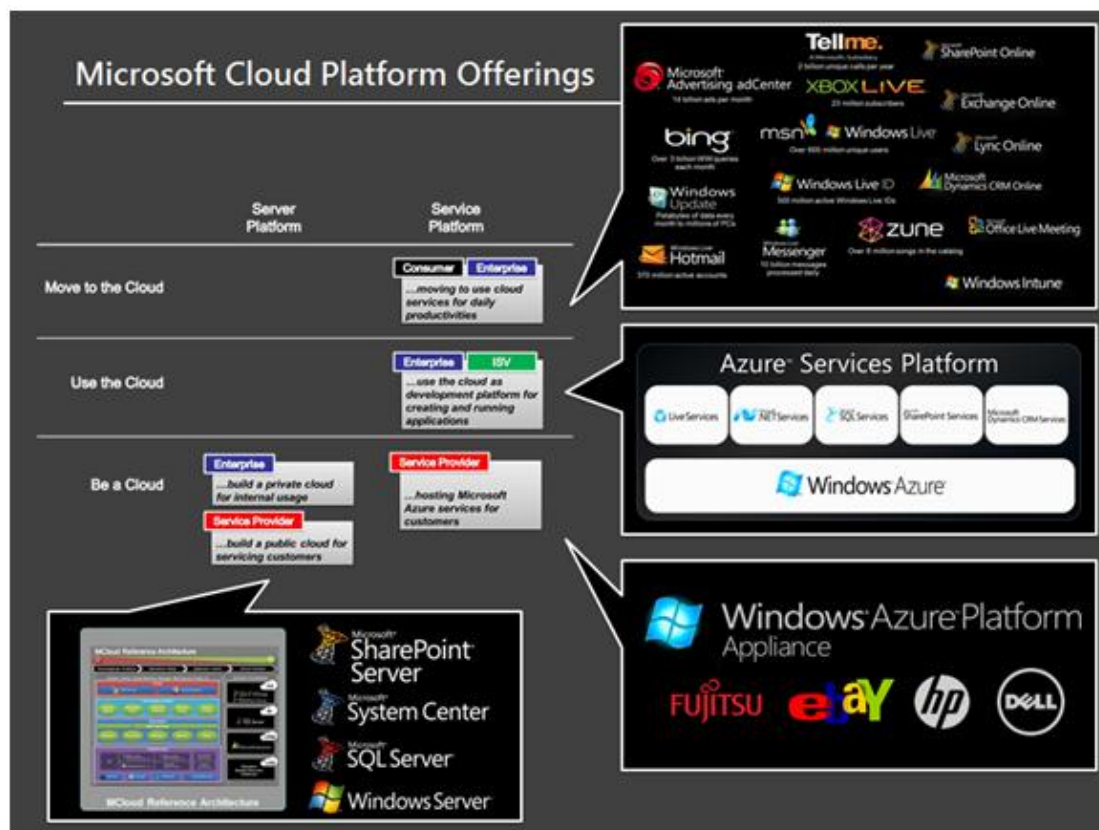


Figure 28: Microsoft Cloud Platform Offerings. Source from Microsoft.

Microsoft seems to offer the most complete solution in cloud computing are, whether the user is developing his application into MS PaaS platform such as Windows Azure and SQL Azure, or directly in the cloud using MS enterprise application service (SaaS) such as MS Online Services, and even help to build the private cloud for enterprises by its Windows Server or System Center (IaaS).

In 2011, Microsoft releases Office 365 which provides a suite of cloud-based applications to complement and enhance the Office suite for desktop client experience plus Microsoft's Server products (including Exchange Server, SharePoint Server, and Lync Server).

Now, Microsoft has more than 70% of employees engaged in R & D cloud computing-related products and services, and is expected to reach 90% within a year. Microsoft also continues to invest more than 95 billion dollars on research and innovation in the product, and then almost every Microsoft products and services associated with cloud computing, customers can order the same software development tools, developed to run on the server platform Service platform, or cloud services, and can be accessed by any device to be used. It is clear that

Microsoft aimed at being the king of the clouds as well as it did in the past for PC Operating system and desktop word processing suite.

3. Yahoo

If we are talking about the development of Yahoo's cloud computing, Hadoop would immediately come out in our mind. Yahoo is currently the largest Hadoop users from the Hadoop report of October 2009 showing Yahoo taking 4000 node clusters in operation. Back in January 2006, Yahoo decided to invest in Hadoop project starting from an interesting prototype to now the robust scalable framework today. Hadoop is under the open source project of Apache Software Foundation written in java and can offer the distributed computing environment for large scale data. Hadoop framework is built by the concept of Google's BigTable and Google File System so that it is very similar to Google's cloud computing infrastructure.

After importing Hadoop into Yahoo, it becomes more competitive with its new core framework. Most Yahoo properties such as Yahoo! Mail we interact with have already used the cloud as SaaS to some extent.

On February 2011, Yahoo announced that it is developing an open-source cloud-serving engine which provides its cloud computing software stack as an open source software that indicates Yahoo's cloud will be an IaaS offering similar to Amazon's EC2

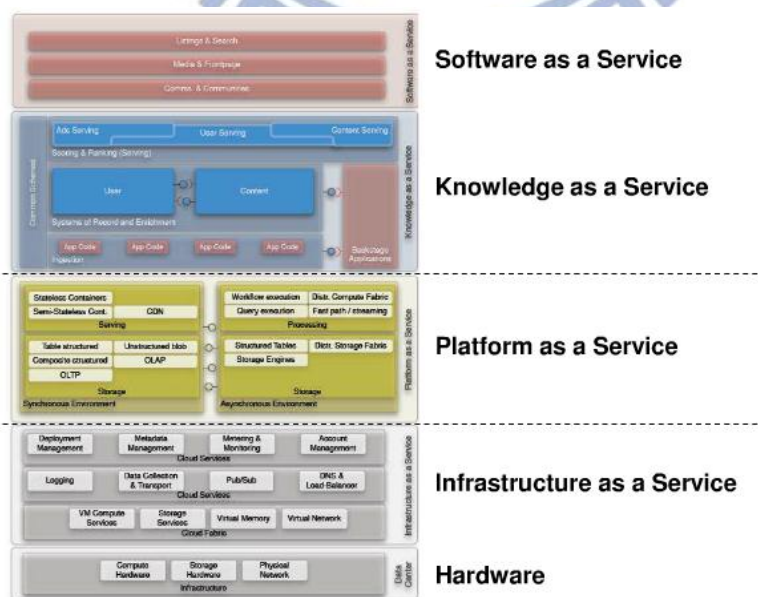
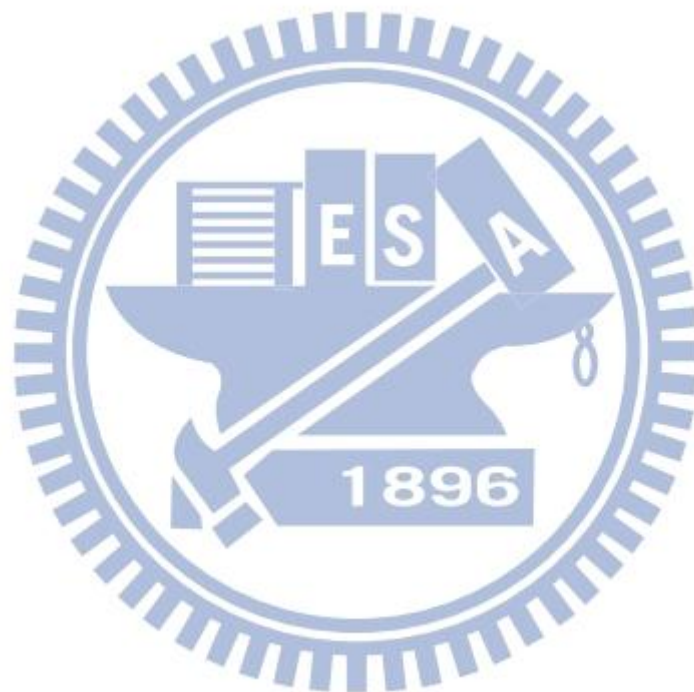


Figure 29: Yahoo! Cloud Architecture. Source from Yahoo!. 5/13/2011



IV. Financial Comparison within Google and its

Competitors

4.1. Competitive Analysis

If considering online marketing business, Google's primary competitors are Yahoo, AOL, and MSN (from Microsoft). All of which have the competition in the industry of "Internet Information Providers." MSN is a division of Microsoft; data is unable to separate out for each section.

Competitors

Direct Competitor Comparison					
	GOOG	AOL	PVT1	YHOO	Industry
Market Cap:	170.63B	2.11B	N/A	21.76B	105.00M
Employees:	24,400	5,860	N/A	13,600	255.00
Qtrly Rev Growth (yoy):	26.60%	-26.50%	N/A	-11.90%	19.80%
Revenue (ttm):	31.12B	2.42B	N/A	6.32B	63.07M
Gross Margin (ttm):	64.97%	41.72%	N/A	58.46%	57.89%
EBITDA (ttm):	12.16B	705.30M	N/A	1.40B	2.10M
Operating Margin (ttm):	34.35%	15.38%	N/A	13.13%	3.76%
Net Income (ttm):	8.85B	-790.70M	N/A	1.23B	N/A
EPS (ttm):	27.29	-7.34	N/A	0.90	0.02
P/E (ttm):	19.45	N/A	N/A	18.47	23.27
PEG (5 yr expected):	0.93	0.84	N/A	2.02	1.37
P/S (ttm):	5.98	0.86	N/A	3.46	1.90

AOL = AOL, Inc.

Pvt1 = MSN (privately held)

YHOO = Yahoo! Inc.

Industry = Internet Information Providers

Figure 30: Direct Competitor Comparison. Source from Yahoo! Finance.

As we note that these four companies are different in their most important company philosophy. "Google focused on improving the ways people connect with information which innovations are in web search and advertising. (Google 10-K)" Yahoo makes

itself as a portal “to connect people to their passions, their communities, and the world’s knowledge. (Yahoo 10-K)” Microsoft’s MSN, “provides personal communications services, such as email and instant message, and online information offerings such as MSN Search, the MSN portals.” (Microsoft 10K) AOL is basically an internet service provider who brings together the leverage of the internet with its own branded service. Google is the top one market capitalization with 170.63 billion dollars. As we can see Google’s Gross Margin 64.97% is much higher than the industry. Its Operating Margin 34.35% is even double of its main competitors, AOL and Yahoo!, which means Google has better operating result in its core business.

The first thing we are looking at is P/E ratio of Google, Yahoo! and the industry. Comparing the industry P/E in 2006 which was 43.05 with the current industry P/E which is 23.27, we assume the industry is taken from high growth to sustainable market. Google’s P/E is lower than the industry P/E which means the share is relatively in discount – you can pay less for earning \$1 of company’s earning. Moreover, let’s look at other ratios. Google’s expected five years PEG is 0.93 which is under 1 and comparing with the industry’s PEG, 1.37, Google stock currently seems to be undervalued and its potential growth has not taken into account of its stock price.

4.2. Google Financials

Google trades on the NasdaqGS with the symbol “GOOG.” In this section, we are going to have a deep analysis by comparing numerous crucial statistics with Yahoo!¹⁵. Here is the snapshot of the top level financials for Google at the time of writing:

¹⁵ Due to MSN is privately held and Microsoft belongs to deferent industry (not Internet Information Providers), here we decide not to put it into consideration.

Google Inc. (NasdaqGS: GOOG)
 After Hours: **525.10 0.00 (0.00%)** 6:10PM EDT

Last Trade:	525.10	Day's Range:	522.39 - 528.28
Trade Time:	Apr 21	52wk Range:	433.63 - 642.96
Change:	↓ 0.63 (0.12%)	Volume:	2,471,056
Prev Close:	525.73	Avg Vol (3m):	2,919,310
Open:	527.49	Market Cap:	168.83B
Bid:	521.01 x 100	P/E (ttm):	19.24
Ask:	525.05 x 200	EPS (ttm):	27.29
1y Target Est:	705.35	Div & Yield:	N/A (N/A)

Figure 31: Google top level financial at the time of writing on April 23, 2011. Source from Yahoo! Finance.

With a 52 week range of low 433.63 to high 642.96 and a volume of 2,471,056, Google itself is well traded. Upon further examination for Google:

GOOG

PERIOD
AVERAGES

% OF SALES	2001- Dec	2002- Dec	2003- Dec	2004- Dec	2005- Dec	2006- Dec	2007- Dec	2008- Dec	2009- Dec	2010- Dec	5-YR	10-YR
Research & Development	@NA	9.21	15.66	12.39	9.77	11.59	12.78	12.82	12.02	12.83	12.41	12.12
Advertising	@NA	1.59	1.43	1.18	1.7	1.78	1.43	1.22	1.49	2.63	1.71	1.61
COGS	@NA	26.06	39.85	41.41	37.2	35.18	34.25	32.71	31.03	30.93	32.82	34.29
Pretax Income	@NA	42.07	23.65	20.39	34.89	37.82	34.19	26.86	35.44	36.82	34.23	32.46

YHOO

PERIOD
AVERAGES

% OF SALES	2001-D ec	2002-D ec	2003-D ec	2004-D ec	2005-D ec	2006-D ec	2007-D ec	2008-D ec	2009-D ec	2010-D ec	5-YR	10-YR
Research & Development	17.58	15.05	13.4	10.68	10.83	12.97	15.56	16.95	18.73	17.11	16.26	14.89
Advertising	15.82	9.84	7.08	4.49	3.82	3.45	3.16	2.64	3.05	@NA	3.07	5.93
COGS	12.62	7.84	15.56	31.79	34.39	35.18	32.81	32.2	33.62	31.25	33.01	26.73
Pretax Income	-11.31	18.86	24.05	35.91	50.82	18.83	14.35	9.61	12.76	23.18	15.75	19.71

Table 2: Operating Expense Comparison. Data Source from: Compustat 2011

As we see above tables, the substantial expenditure for Research and Development (R&D) is essential to maintain and improve the company's competitive advantage in a highly innovative and fast developing market environment. In 2003, Google invested 15.66% of its revenue in R&D, which is the highest in ten years. Probably it is used to signal the true quality of the firm in its pre-IPO period. While comparing with Yahoo!, the 10-YR Average of R&D expense of Yahoo! is higher than Google, which implies Yahoo! always try to win back the market dominator although its market share is now far behind. For the Advertising budget, Yahoo! overall spends more on that than Google does.

Cost of goods sold may be increased by an upgrade of server space and the continue acquisitions of other companies; for instances the acquisitions: DoubleClick, AOL and YouTube for Google. Broadcast.com, GeoCities, and Overture for Yahoo!

GOOG

PERIOD
AVERAGES

GROWTH RATES	2001-D ec	2002-D ec	2003-D ec	2004-D ec	2005-D ec	2006-D ec	2007-D ec	2008-D ec	2009-D ec	2010-D ec	5-YR	10-YR
Sales	@NA	@NA	233.54	117.56	92.48	72.76	56.47	31.35	8.51	23.98	34.98	64.82
Net Income	@NA	@NA	6.01	277.78	267.16	110.01	36.6	0.55	54.26	30.44	37.13	81.99
EPS (Basic)	@NA	@NA	6.25	305.88	156.52	92.28	32.52	-0.52	53.19	29.44	33.75	70.04
Cash Flow	@NA	@NA	32.41	251.36	221.29	103.04	40.14	9.76	41.22	27.1	37.08	79.48
Capital Spending	@NA	@NA	375.3	80.43	162.77	127.01	26.28	-1.85	-65.66	396.12	16.2	60.4
Reinvested Earnings	@NA	@NA	125.08	208.74	245.67	150.34	83.22	45.94	46.41	38.73	64.97	111.39
Equity Capital	@NA	@NA	220.85	386.04	221.57	80.91	33.16	24.46	27.5	28.43	34.67	93.82
Total Assets	@NA	@NA	203.76	280.21	210.01	79.85	37.15	25.39	27.48	42.85	37.8	88.91

YHOO

PERIOD
AVERAGES

GROWTH RATES	2001-D ec	2002-De c	2003- Dec	2004- Dec	2005- Dec	2006- Dec	2007-D ec	2008-D ec	2009-D ec	2010-D ec	5-YR	10-YR
Sales	-35.38	32.85	70.51	119.34	47.5	22.22	8.46	3.43	-10.38	-2.1	2.82	27.89

Net Income	-231.1	215.25	122.45	252.93	125.86	-60.37	-12.16	-35.71	40.94	105.97	-8.96	@NC
EPS (Basic)	-223.08	212.5	116.67	217.95	117.74	-60	-9.26	-36.73	35.48	114.29	-8.84	@NC
Cash Flow	-72.99	472.48	83.78	189.41	99.32	-55.66	8.8	6.56	5.71	62.62	0.16	36.67
Capital Spending	-8.69	-40.2	127.59	109.24	66.57	68.52	-12.6	12.05	-35.72	64.61	4.42	29.69
Reinvested Earnings	-162.26	79.08	2,828.68	586.23	82.49	32.01	22.93	4.49	-60.37	@NA	-5.3	@NC
Equity Capital	3.7	15.01	92.88	62.75	20.63	6.94	4.06	18.02	11.04	0.52	8.98	23.79
Total Assets	4.84	17.27	112.59	54.73	18.02	6.29	6.22	11.94	9.1	-0.05	7.4	23.49

Table 3: Growth Rate Comparison. Data Source from: Compustat 2011

Google had tremendous revenue growth within 2003 to 2006 (growth from 233.54% to 72.76%). Ever Since Google entered the search and advertising market, it has left Yahoo far behind it and has been the market leading. We can see Yahoo's revenue growth according to Google's 2004 IPO, and Yahoo's revenue has dropped rapidly. Even from 2007, Yahoo only has had one digit revenue growth and even negative growth.

Let's look at the growth rate of cash flow in these two companies. In 2008, Google had the lowest cash flow rate 9.76%. Besides the reason of financial crisis this year, Google completed its acquisition of DoubleClick by \$3.1 billion. In contrast, Yahoo occurred twice of its lowest cash flow which was in 2001 and the other was in 2006 which are -72.99% and -55.66%. In 2001, the Internet bubble burst, numerous Internet companies went into bankruptcy. Yahoo encountered the financial problem as well; its stock price shortly touched \$4 a share in 2002.

GOOG	PERIOD AVERAGES											
TURNOVER ANALYSIS	2001 -Dec	2002 -Dec	2003 -Dec	2004 -Dec	2005 -Dec	2006 -Dec	2007 -Dec	2008 -Dec	2009 -Dec	2010 -Dec	5-YR	10-YR
Receivables	@NA	@NC	13.53	11.88	11.47	10.55	9.14	8.81	8.09	7.15	8.75	10.08
Total Assets	@NA	@NC	2.53	1.52	0.9	0.74	0.76	0.76	0.65	0.6	0.7	1.06

YHOO	PERIOD AVERAGES											
------	-----------------	--	--	--	--	--	--	--	--	--	--	--

TURNOVER ANALYSIS	2001 -Dec	2002 -Dec	2003 -Dec	2004 -Dec	2005 -Dec	2006 -Dec	2007 -Dec	2008 -Dec	2009 -Dec	2010 -Dec	5-YR	10-YR
Receivables	9.01	10.46	8.21	9.35	8.75	7.78	7.02	6.81	6.22	6.26	6.82	7.99
Total Assets	0.31	0.37	0.37	0.47	0.53	0.58	0.59	0.56	0.42	0.45	0.52	0.46

Table 4: Turnover Analysis. Data Source from: Compustat 2011

The higher receivables turnover occurs, the shorter average collection period results. This also implies the management of the company is more efficient. Otherwise, the company's working capital will be too much slack in accounts receivable that affects normal cash flow of the company. In general, the higher accounts receivable turnover, the more asset liquidity. The short-term liquidity is strong which can reduce bad debt losses of the company. Let's look at receivable turnover from Google and Yahoo. Google overall has the higher receivables turnover of 8.7 in 5 years average comparing with Yahoo's 6.82 and 10.08 in 10 years average comparing with Yahoo's 7.99. Total Asset Turnover for Google is overall higher than for Yahoo, 1.06 for Google 10-years average and 0.46 for Yahoo 10-years average. Therefore, it shows that Google is better using its assets to generate income. In conclusion, the above comparison indicates Google has a better, efficient and effective credit policy.

GOOG	PERIOD AVERAGES											
FINANCIAL LEVERAGE	2001 -Dec	2002 -Dec	2003 -Dec	2004 -Dec	2005 -Dec	2006 -Dec	2007 -Dec	2008 -Dec	2009 -Dec	2010 -Dec	5-YR	10-YR
Leverage	@NC	@NC	1.47	1.18	1.1	1.09	1.1	1.12	1.12	1.2	1.13	1.17
Net Borrowing Power	@NA	1.47	3.41	9.89	30.89	43.33	57.16	64.93	93.55	122.61	76.32	47.47
LT Debt % Capital	@NA	3.35	0.33	0	0	0	0	0	0	0	0	0.41
Total Debt % Capital	@NA	5.59	1.09	0.06	0	0	0	0	0	7.49	1.5	1.58
LT Debt % Common Equity	@NA	5.02	0.37	0	0	0	0	0	0	0	0	0.6
Current Ratio	@NA	2.59	2.38	7.91	12.08	10	8.49	8.77	10.62	4.16	8.41	7.44
Quick Ratio	@NA	2.33	2.13	7.42	11.7	9.63	8.12	8.03	10.0	4	7.97	7.05

FINANCIAL LEVERAGE	YHOO										PERIOD AVERAGES	
	2001 -Dec	2002 -Dec	2003 -Dec	2004 -Dec	2005 -Dec	2006 -Dec	2007 -Dec	2008 -Dec	2009 -Dec	2010 -Dec	5-YR	10-Y R
Leverage	1.2	1.22	1.32	1.32	1.28	1.26	1.27	1.25	1.21	1.19	1.24	1.25
Net Borrowing Power	0.92	0.89	0.78	2.49	1.96	2.38	2.17	@CF	@CF	@NA	@N C	1.66
LT Debt % Capital	0	0	14.5 6	9.5	8.05	7.56	0	@CF	@CF	@CF	@N C	5.67
Total Debt % Capital	0	0	14.5 6	9.5	8.05	7.56	7.85	@CF	@CF	@CF	@N C	6.79
LT Debt % Common Equity	0	0	17.1 9	10.5 6	8.76	8.19	0	@CF	@CF	@CF	@N C	6.38
Current Ratio	2.93	2.36	2.43	3.46	2.86	2.54	1.41	2.78	2.67	2.67	2.42	2.61
Quick Ratio	2.78	2.16	2.25	3.38	2.73	2.4	1.33	2.65	2.5	2.41	2.26	2.46

Table 5: Financial Leverage. Data Source from: Compustat 2011

Financial leverage ratios give an indication of the long term solvency of the company. It is not like the liquidity ratios which are concerned with short term assets and liabilities. If a company is maintaining its high leverage ratio, over the long-term, this would lead to trend down badly or even bankruptcy. Google leverage ratio in 10 years is 1.17 comparing with Yahoo which is 1.25. A company which has higher brand value or market value has higher Borrowing Power. Google Net Borrowing Power in 10 years is 47.47, which is higher than Yahoo, 1.66 in 10 years, which indicates Google could easily obtain funds and expand its operations.

Let's look at both companies' liquidity ratios: Current Ratios and Quick Ratios.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Yahoo's Current Ratio overall is lower than Google, 2.61 in Yahoo 10-years average to 7.44 in Google 10-years average.

$$\text{Quick Ratio} = \frac{\text{Cash and cash equivalent} + \text{Marketable Securities} + \text{Account receivable}}{\text{Current Liabilities}}$$

Quick ratio meters the ability of a company to exercise its recent cash or quick assets to pay off its current liabilities immediately. Still, Google overall the Quick Ratio is higher than Yahoo, 7.05 in Google 10-years average to 2.46 in Yahoo 10-years average.

In conclusion, Google's liquidity ratio is higher than Yahoo so that it has better capability to handle its short term debt.

4.3. Conclusion

After all we conclude three parts to indicate that Google's financial is much healthier:

- *Sustainable high growth*

From the above 10 years financial comparisons, it reveals Google's successful managing growth. Moreover, in 2006, as we see Yahoo encountered its second crisis after its first crisis in 2001 the dot-com bubble. The year 2006 seems to be the breaking point between Yahoo and its competitors, especially Google. After that, in 2007, Google reached an important success on the online advertising by attribute the success to making the acquisition of Double-click, the first worldwide Internet advertising solutions while Yahoo was losing its partnership with MSN on advertising platform. Besides the partnership losing from MSN, the reasons for the downturn of Yahoo are concluded as following: 1) Yahoo put all the bids on its Panama search ad platform to compete with Google AdWords in 2007 while Google had already had its AdWords launched for several years (since 2000). Panama did not narrow the gap between Yahoo and Google while Yahoo was waiting for the dust settles in its Panama project but in the meantime Google kept its high growth. 2) The acquisition of YouTube Google made actually broadened the popularity of searching a new website. From the above reasons, Google strikes while the iron is hot. Google leaves its other competitors far behind. However, it is too costly for Yahoo and MSN to realize that they are unable to compete effectively with Google individually so that they forge their re-alliance in 2011, the Search Alliance Agreement, to better compete against Google.

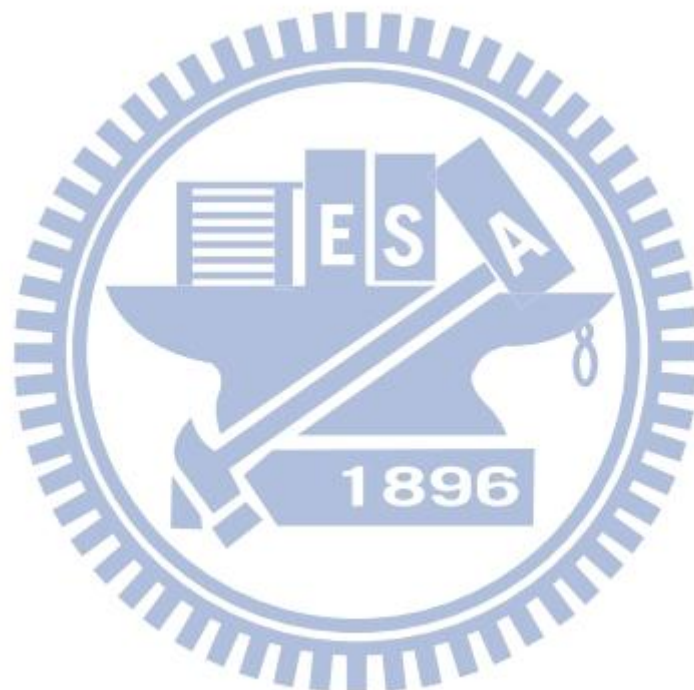
- *Higher cash flow*

Also, from above 10 years financial comparisons we find out Google arrange a high level of cash available for new external growth such as for the international markets

and strong competition with MSN and Yahoo. On the other hand, Yahoo leaves less cash and keeps a high level of working capital and SG&A.

- *Healthier debt structure*

No matter on long term or short term debts, Google has maintaining better leverage ratios and liquidity ratios. It is fully capable of acquiring other firms and paying its bills at the same time without borrowing extra funds from banks



V. Factors to Google's Success

Someone would say that Google was the biggest winner from the dramatic growth of the internet. Without the high speed and stable bandwidth of the internet, there is no Google today. However, was luck the only reason attributed to Google success? Not really. The truth of Google's success is neither technical nor organizational, but a conjunction of both. In this chapter, we will give a wide vision of Google's key success factors followed by the supporting literature review.

5.1. The Spiral Framework

The spiral model is first introduced in 1986 by Berry Boehm to illustrate the iterative development in software development. Throughout this research, we identified four major reasons on which drive to Google's success. We illustrate these four factors in a spiral framework:

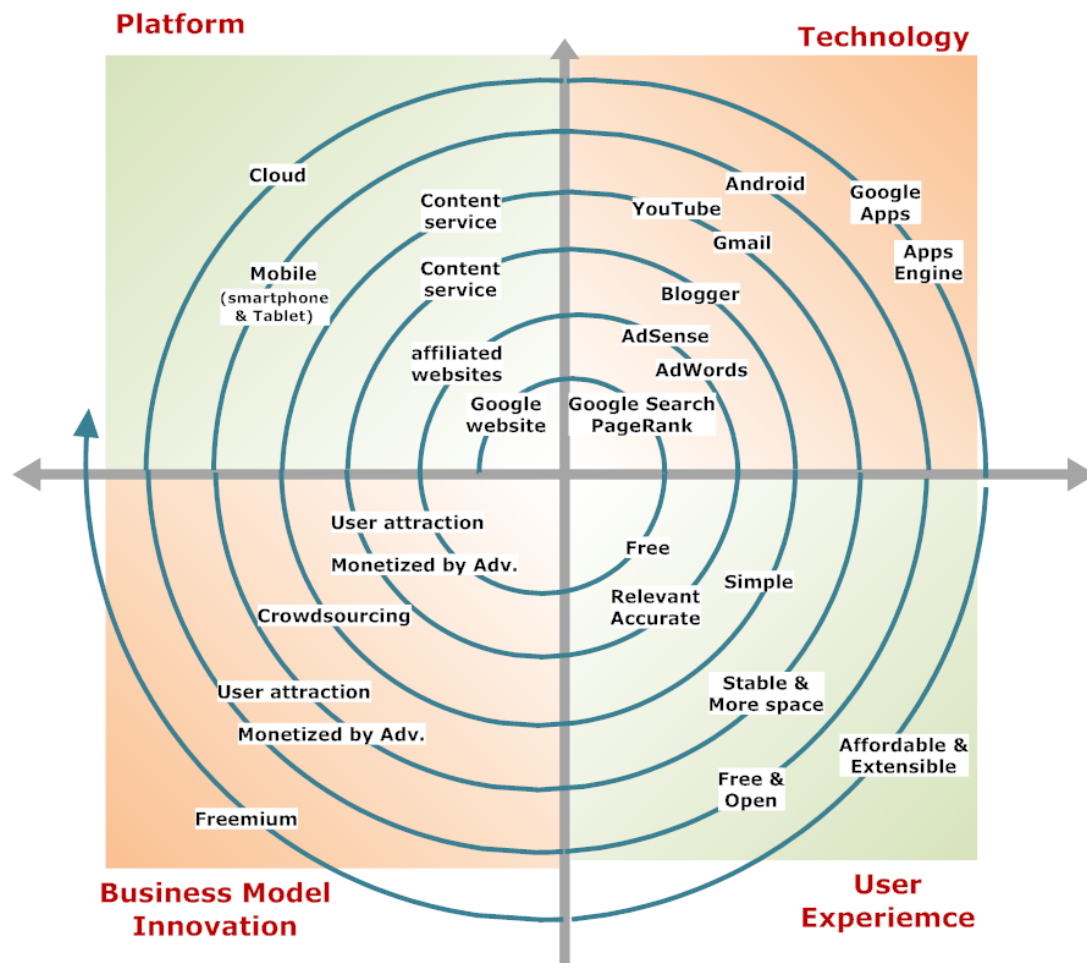


Figure 32: The Spiral Framework of Google. Source from the author.

The spiral framework can be also illustrated along with the Google Key milestone figure which is in Chapter 2.

5.1.1. The Most Inner Spiral

This spiral demonstrates the products launched in the initial stage and advertising stage. Let's look the center part of the spiral framework starting from "**Platform.**" Google initiate its first product – the Google search engine website famous with its simple, clear, and easy-to-use user interface, by the PageRank "**Technology**" giving the fast, accurate, free and relevant search result which win the most "**User Experience**". Due to its search engine is free to use, Google believes the philosophy of "focus on the user and all else will follow." In this stage, Google did not earn its revenue from search engine; however, it did build up its good reputation of the search engine and attract more and more users to adopt Google Search Engine as their primary search tool. This User Attraction Strategy establishes its **innovative business model** – "all else will follow," it is true that later its business model generated more than \$28 billion dollars last fiscal year (2010) for Google, which turns Google to be the biggest advertisement company in the world.

The spiral framework turns back to "**Platform.**" The platform we just mention in the last paragraph was Google search engine website. Now the platform is in between Google search engine website and the affiliated websites. Google found a way to monetize from the search results then it came out with AdWords keyword advertising "**Technology**" in which Google redefined online advertising to keyword advertising with its "**Innovative Business Model**" – pay by click not pay by exhibition. At that time, Google was the first search engine to profit off of keyword advertising. Businesses use its AdWords program to promote their products and services.

The spiral framework turns back to "**Platform.**" Google tried to expand its platform to affiliated websites to increase the opportunity that its advertiser's advertisement can be seen effectively not just see and ignore. Google launched AdSense "**Technology**" to let the web publishers to include the advertisement enrolled in the AdSense program into their own website. Both Adwords and AdSense give the relevance **user experience**. It looks simple but it works effectively that it captures the relevance between the search keyword and the advertisement in terms of reducing the intentional disregard of advertising. Google's success attributed to

innovative **business strategy** – create innovative service to attract users, advertisers and publishers then follow.

5.1.2. The Second Inner Spiral

This spiral demonstrates the products launched in the Diversified Stage and Audio & Video Services Stage. The previous spiral framework demonstrates the search and advertising platform. Here “**Platform**” moves to the content and services. Google’s Blogger “**Technology**” is like other Google services with free and simple to use **user experience**. The business model is as AdSense which includes the advertisement into the blogger’s website. Moreover, it offers displaying advertisement in RSS feeds. The **business model** for Blogger is based on the “crowdsourcing” concept to attract user and also its relevant advertisement on the blog which attracts people from the blog content to click on the advertisement that they are really interested in.

The spiral is back to **Platform**, still in the content and services. For the “**Technology**” Google launched Gmail free service. Like Yahoo Mail and MSN Hotmail, Gmail will let users search through their e-mail. However, unlike those competitors, though, Google will offer enough storage (1GB by comparing with Hotmail’s 2MB free email storage and Yahoo’s 4MB) so that the average e-mail account holder will never have to delete messages. Besides the free and simple user interface **user experience**, it also provides more storage and less spam mail. The **business model** for Gmail follows the Google search engine model which provides outstanding and stable service with no charge for the user. Google monetizes Gmail from its Adwords advertising coming along with mail service.

The other product within this period is YouTube. YouTube is a video-sharing website which is free to the users but it requires users to register to upload video. Besides the **business model** - to bring the masses together and generate revenue through advertising, the rests are the same as Gmail. Although the business model for YouTube is still advertising, it also contains the concept of crowdsourcing. The website attracts the users to linger on its website not also due to its free service and the ability to share video with friends who are on the internet but also due to it containing the influencing user comment for each video. This is not surprising that Google did the acquisition of YouTube – they are sharing the same philosophy of “focus on the user and remains free and open.”

However, YouTube is facing some criticism: the copyright issue. YouTube prohibits the uploading of any copyrighted material, but it does not pro-actively enforce it. If a piece material is reported to be copyrighted, YouTube will remove it. Until now, those copyrighted companies have not yet taken any action for those video infringement issues maybe it is due to its marketing strategy – free broadcast to the audience without paying any commercial fee to those public channels and YouTube becoming its free marketing platform to promote its video or music.

5.1.3. The Most Outer Spiral

This spiral demonstrates the products launched in the Mobile and Cloud Computing Stage. Here we first demonstrate the spiral for the mobile **platform**. Google has developed its mobile operating system, Android. It tried to expand its advertising enterprise in the broadband for PC and laptop into the one in the mobile devices. By its Android “**technology**”, it claims it still follows its ideology of “free and open” **user experience**. The **business model** for this stage is more than just the online advertising. It was surprising that Google entered the embedded OS (operating system) battle since it relies on neither hardware nor software as its main revenue stream. The current Google biggest competitor in the mobile phone OS is Apple iOS; however, Apple’s main revenue stream was hardware and software which is interwoven with a content ecosystem (such as music, applications, and books). Recently Apple crosses into the advertising sector, iAd Gallery, the in-App advertising. Android business model threatens Apple in smartphone market by comparing to Google’s open and partner strategy – Google doesn’t involved in its hardware production but relies on its OEMs for its Mobile phones and counts on the device manufacturers to use Android system and Apple’s closed strategy – it engineers much in its software and hardware which it buys the components from it OEMs and it does its software and hardware integration that originally expect to win more user experience however it limits the growth of Apple’s platform. On the other hand, Google open and partner strategy helps its Android market grow impressively and become the mobile platform leader.

The spiral is back to the **platform**, the cloud computing platform. Google launched Google Apps and Google AppEngine **technology** for its SaaS (Software as a Service) and PaaS (Platform as a Service) sectors. Google Apps includes Gmail, Google Calendar, Google Docs, Google Talk, and Google Pages that someone would say the Google Apps is aiming at the individual user or small and medium enterprise such as the 10-employee company to provide free or low cost web based software. Recently,

more and more big companies not just small or medium enterprises start to think about moving from Microsoft Office suite to Google Apps such as Procter & Gamble (P&G) and General Electric (GE). Reacting to the cloud solution Google provided, Microsoft launched its cloud office product called Office 365. However, Google leaves a better **user experience** which put itself to an unbeatable position:

- Price. Google offers a straight-forward pricing scheme: \$50/user/year. With this \$50, users receive everything they need to operate within the Google platform. In contrast, although Microsoft least expensive option in Office 365 is \$6/user/mo, and this baseline subscription is only available to businesses fewer than 50 people. Furthermore, this subscription at \$6/user/mo. does not include many platform essentials such as Office Web apps.
- Extensibility. Due to Google's "open" philosophy, Google's commitment to standards-based protocols, open data formats, and world-class security allows the Google Apps Marketplace to provide hundreds of integrated applications. On the other hand, Microsoft still believes its close strategy. Its so-called cloud products still need to be integrated with its other traditional products due to its legacy client-server technology, third-party or other internal applications cannot be securely integrated.

The **business model** Google adopted here is the Freemium model which offers product or service with free of charge but charging a premium for advanced features or functionality. The biggest issue for the Freemium model is how to convert free users to paid subscriptions. Indeed, Google Apps currently contributes less than 1% of the revenue but it does has high potentials to attract more paid user such as bundling Apps with its growing library of mobile business apps for the Android smartphone operating system which beats Microsoft Office 360's inability to scale up to any portable devices, it only working for desktop window system. Integrating Google Apps together with the Android app ecosystem could give Google a tremendous advantage above Microsoft and Apple. Despite the fact that Microsoft dominates the PC software and enterprise market, it only provides a few mobile apps. And although Apple dominates the mobile app market, it offers little presence in the enterprise space. Google complements the above issue by its Google Apps differentiating and positioning the market offering.

5.2. The Successful Factors

From last section we can conclude that the key successful factors for Google could

be driven from four categories: 1) Platform 2) Technology 3) User Experience and 4) Business Model. From chapter 5.1, we realize Google is pursuing a platform strategy rather than a product strategy and it aims at becoming a platform leader in the industry. Before, the quality of the products or services is the key element for a corporate's success. Nowadays, the success comprises diversified elements. Although the quality is crucial to contend in today's industries, it may no longer give an obvious source of competitive advantage. A lot more managers grieve that product innovation and quality no more give the grounds for a competitive edge (Butz and Goodstein 1996). In this chapter, we will give the literature review on our concluded four factors.

5.2.1. Platform

A platform is a foundation technology or service which is indispensable to businesses in this industry (Gawer and Cusumano 2008). The main role of platforms is to provide a set of clearly defined rules and practices that help organize and support the activities of many users (Hagel et al. 2008). Web 2.0 is identified as a business revolution motivated through the Web as a platform for innovation and also the appearing new rules for value creation on the platform (O'Reilly 2006). In the Web 2.0 era, the platform leadership depends on five interdependent dimensions: innovation ability, connectivity, complementarities, efficiency, and network effects (Lee et al. 2010). The message of successful Web 2.0 companies such as Google or Flickr is that Web 2.0 is not only about building applications, but also building a platform where different types of users can interact (Shen 2008). But, how to monetize through the platform the answer for this question Google has already kept in mind. Google realized that they are focusing on users but not directly earning from the user. Instead, Google find the one who are willing to pay for the users: the advertisers. Due to that its main revenue source is from advertising not its products themselves, Google entered what is called a "two-sided market" or called "catalyst business." In this type of market or business, it builds attractive and convenient platforms that benefit and appeal to two or more groups.

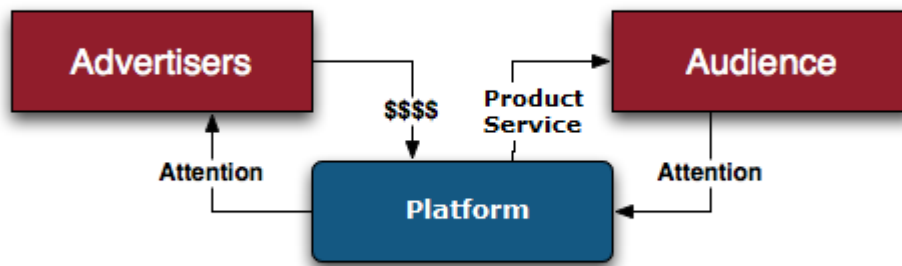


Figure 33: Google's the two-sided market platform. Source from the author.

Evans & Schmalense (2007) describes that catalyst business has one or more core functions: One is the matchmaker role. Typical examples: eBay or your local farmers market which help the producer to find the buyer. Second is the audience-building role. Example: Google or your local newspaper which try to collect audiences that advertisers want. The last one is cost minimizing role. Example: Microsoft operating system or Xbox which aggregate the user in the same platform in order to improve the efficiency and diminish the redundancy and the cost.

In the last chapter of the book, "Invisible Engines," the author describes the future opportunities for multisided software platforms: "Over the next decade invisible engines will transform economic life well beyond our living rooms, cars, and offices. They will change how we buy and pay for things. And they will cut a wide swath of destruction across many industries that have heretofore helped buyers and sellers find and do business with each other." (Invisible Engines, p. 341). Google not only has the above characteristics but also always tries to expand its platform to different dimension to fulfill the users' need.

5.2.2. Technology

As we noted, Google's success started from the Google Search Engine—its innovative PageRank technology with fast, accurate, free and relevant search result. The search result is also acting as a "filter" to mask out the unwanted items and remain the most relevant outcome (Anderson 2008). On the top of the search result,

we may see the top sorting items are the most relevant and the most people clicked on rather than the most updated items. Besides the above merits, the search engine success also includes its scalable architecture – “Google is designed to scale well to extremely large data set”¹⁶ (Brin and Page 1998). The following statistics on Google Architecture is from Google Lab:

1. Currently there are more than 200 GFS (Google File System) clusters at Google. A cluster can consist of 1000 to 5000 machines. Machines retrieve data from GFS clusters that run as large as 5 petabytes of storage. Aggregate read/write throughput can be as high as 40 gigabytes/second across the cluster
2. In 2008, google claimed that it was able to sort 1 PB (petabyte or 1000 terabytes or 1,000,000 gigabytes) records on 4000 computers with MapReduce software framework.
3. In 2006, it estimated that Google had 450,000 low-cost commodity servers
4. BigTable scales to store billions of URLs, hundreds of terabytes of satellite imagery, and preferences for hundreds of millions of users

In order to build its scalable architecture, Google used numerous lower cost Linux system rather than the expensive powerful supercomputers. The following figure illustrates the cost difference in Altavista search engine (adopting alpha supercomputer) and Google’s search engine.

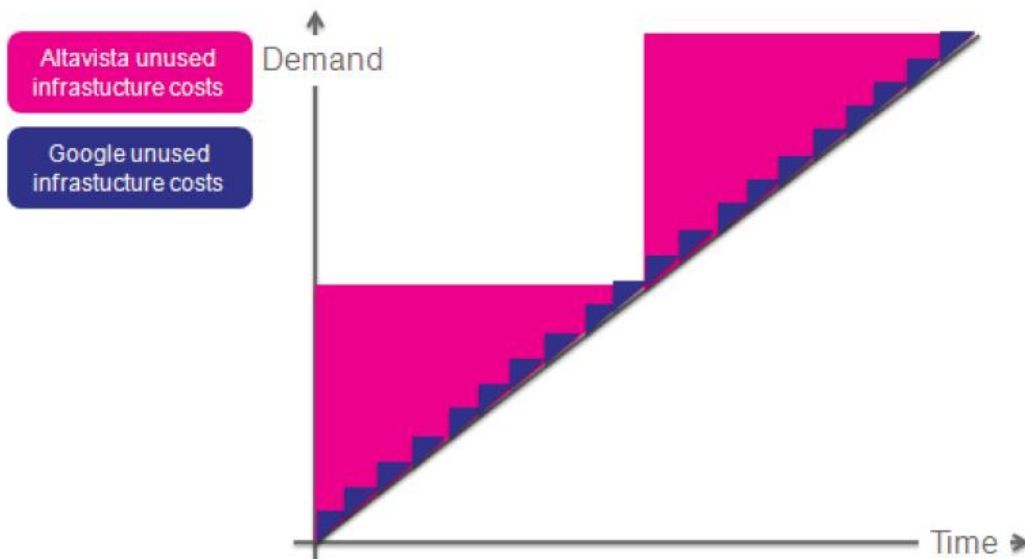


Figure 34: Google cost-optimization in a scalable architecture. Source from faberNovel.

¹⁶ The Anatomy of a Large-Scale Hypertextual web Search Engine, Sergey Brin and Lawrence Page, Stanford 1998. <http://infolab.stanford.edu/~backrub/google.html>

The technology or we should say the infrastructure Google provided can be a competitive advantage for Google. Moreover, it also benefits its platform expansion due to its lower cost scalable architecture. Unlike many companies, producing software for monetized intension, Google thinks itself as a software engineering company rather than as a commercial company. As we see, it puts its beta software or projects on Google Lab website and everyone can download it and participate with these beta projects growth. Some eventually become commercial products such as Google Schedule, Google Maps or Google Docs. These brand extension products are tomorrow's cash cow.

5.2.3. User Experience

When we talk about the User Experience, we must consider first that how a company to create customer value, satisfaction, and then how to maintain customer's loyalty. The last two sections, platform and technology, are illustrating how Google create the value to the customer by using its platform function and innovative technology. "The customer-perceived value (CPV) is the difference between the prospective customer's evaluation of all the benefits and all the costs of an offering an the perceived alternatives" (Kotler and Keller, 2009). Perceived value is one of the key drivers of customer loyalty and also greatly influences customer satisfaction (Yang and Peterson, 2004). The influence of customer satisfaction is quite important. Due to nowadays internet growth, companies need to consider more to their customer satisfaction – the word of mouth spread faster and last longer than ever. Pine and Gilmore (1999) indicate that the Internet contains an ideal platform for staging experiences, annotating that staging experiences is just not about entertaining customers; it is about engaging them.

	Base-line	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	Previous Year % Change	First Year % Change
Internet Portals & Search Engines							63	65	68	71	72	76	77	75	80	83	77	80	3.9	27.0
Google							NM	NM	80	82	82	82	81	78	86	86	80	83	3.8	3.8
Bing (Microsoft)							NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	77	82	6.5	6.5
All Others							67	72	72	78	78	77	78	75	76	78	82	81	-1.2	20.9
Ask.com							NM	NM	62	69	71	72	71	75	74	74	73	80	9.6	29.0
Yahoo!							74	73	76	78	78	80	76	79	77	77	76	79	3.9	6.8
MSN (Microsoft)							71	67	72	74	75	75	74	75	75	75	75	78	4.0	9.9
AOL							56	58	59	65	67	71	74	67	69	70	74	75	1.4	33.9
AltaVista							NM	NM	61	63	66	NM	NM	NM	NM	NM	NM	NM	N/A	N/A

	Base-line	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	Previous Year % Change	First Year % Change
Internet Social Media																	70	70	0.0	0.0
Wikipedia																	77	78	1.3	1.3
YouTube (Google)																	73	74	1.4	1.4
All Others																	72	67	-6.9	-6.9
Facebook																	64	66	3.1	3.1
Myspace																	63	NM	N/A	N/A

Figure 35: The American Customer Satisfaction Index Scores from 1995 to 2011. Source from ACSI developed by the Univ. of Michigan's Claes Fornell.

From figure 30, we see Google is leading in customer satisfaction comparing to its other industry competitors with a score of 83. The higher customer satisfaction leads to the better user experience.

5.2.4. Business Model

Two-sided (Catalytic) reactions are fundamentally difficult to get started and hard to maintain and earn profitable. People who would be successful must determine the best balance that adjusts the passions from the diversified customers (Evans & Schmalense 2006). Google's main revenue source is from the advertising.

As we mentioned, Google's philosophy is to focus on the user so that the traditional way to monetize through advertisement such as pre-roll advertisement or an interrupt flash pop-up does not fit for Google. The Google advertising system's success is based on its fulfillment of potential customers, which is so-called "its long tail advertising strategy". (See figure 31) Those potential customers used to be ignored due to its small scale; however, Google provides cheaper and pay-per-click advertisement that only charges when the advertisement is viewed. This Google advertising strategy lowers the barrier to entry for those potential customers.

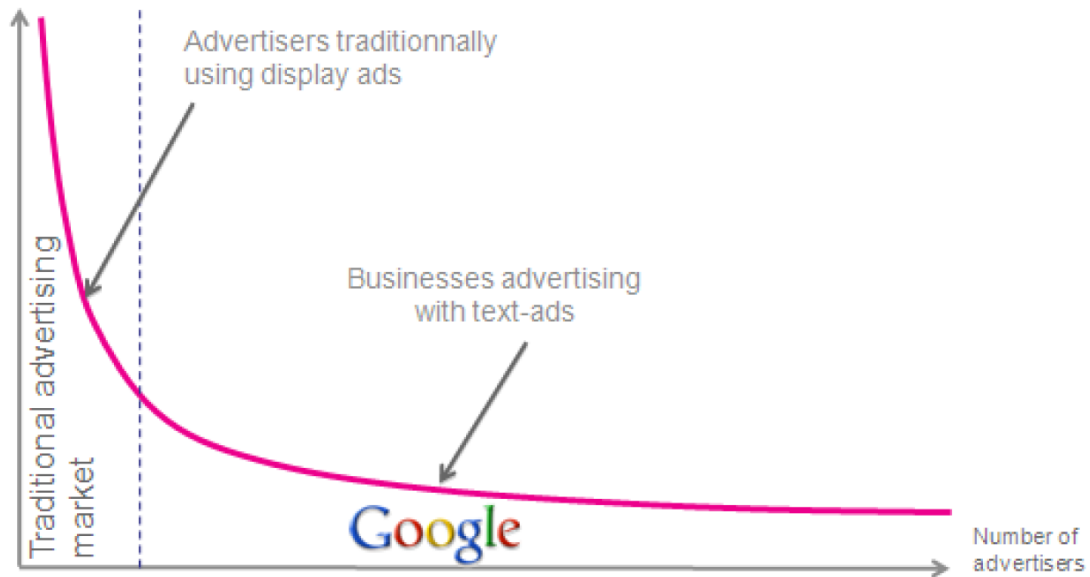


Figure 36: Google's long tail strategy. Source from FaberNovel 2008.

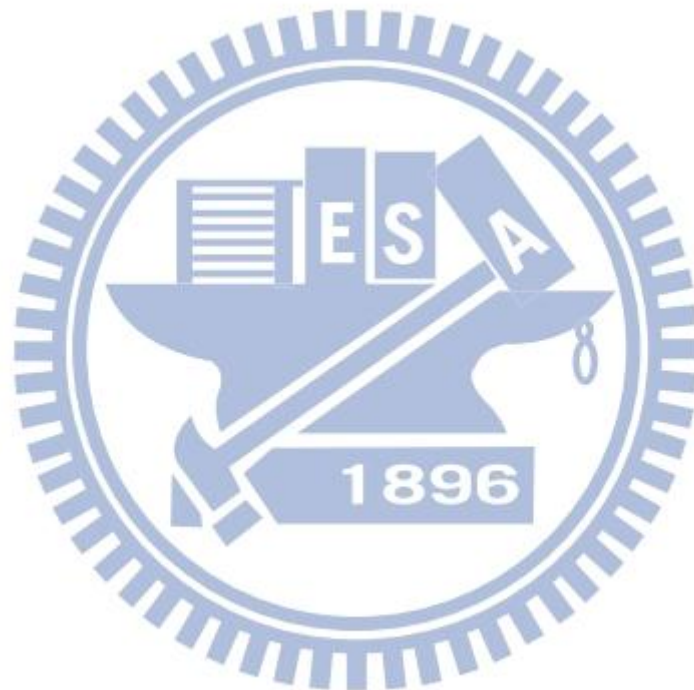
Besides advertising, in its other revenue sources Google is a niche marketer. "Niche marketers aim to understand their customers' needs so well that the customers willingly pay a premium" (Kotler and Keller 2009). Google Docs are free for individuals with basic features. For those business no matter a small company or large, they would choose Google Apps with affordable price for advanced features and other cross platform integration. For example, those companies which contains multi-OSs environment, employees only need to open a browser in his PC or MAC, even in Linux and then can collaborate seamlessly across organizational and geographical barriers by using Google Docs, spreadsheet, email, and presentation. Today's Youtube is not only chosen from the content producers of long tail (the individual audience) but also attracts those movie producers and music companies to put their new works on Youtube. The fact proves that for those videos with highest click through rate in Youtube actually help them become the best-selling products. Chris Anderson concludes the two successful factors of a long tail business in his book -- *The Long Tail: Why The Future of Business is Selling Less of More*:

- I. **Make everything available:** the companies in the long tail must lower its product cost, sharing information, trusting market which allows people to sample the product for free. Currently, the legal restriction for the product distribution is the barrier for developing the long tail so that how to distribute it legally would be the top issue to be encountered – this is What Youtube facing right away. In the end, Anderson gives the conclusion "on the infinite aisle, everything is possible" that illustrates the long tail would bring every product

reach its interested customers especially for those high differentiated and niche products.

- II. **Help me find it:** By the growing fast internet, Google's search engine brings the most relevant link to what the user looking for. Google Map provides the user free online map and Google Earth lets user fly anywhere on Earth to view satellite imagery, maps, terrain, and 3D buildings which even other commercial map software could not catch up.

We clearly see that Google, eBay, and Amazon as the best companies that exploit "the power of many", the best niche players. The enhanced e-commerce nowadays gives the equal opportunity no matter in hot selling products or a niche product.



VI. Conclusion and Issues

Besides the four main factors -- **Platforms, Technology, User Experience, and its Business model** we discuss in this research, Google's success is driven from its philosophy – “focus on the user and remains free and open” and the motto “don't be evil.” However, it has still been facing various challenges. Just recall the pull-out from China in 2010, Google was asked to censor its search result and reorder certain sensitive terms priority in order to satisfy the authorities in Beijing. However, Google announced its withdrawal of Search market in China which is still uncertain if it would sabotage their long term prospects for world domination. Despite the withdrawal in China, it is a hard battle to compete with Baidu and Google knew it would never be the number one Chinese search engine which Baidu has had its dominance since it was founded in 2000¹⁷.

Starting from 2010, Google expands its territory from computer and mobile into television region to promote Google TV just like Apple TV. Google TV project consists of four companies: Google collaborates with Intel, Sony and Logitech to develop Google TV platform by supporting them the operating system and software. Logitech is responsible for developing TV used keyboard which is to replace the TV remote control. Intel provides AtomCE4100 processor and Sony supports the integration into Blu-ray players in fulfill the needs of both TV and computer functions. However, on November 2011 Logitech announces that it is going to stop the collaboration with Google TV set-top box project, Revue, which would hinder the prosperity of Google TV. One misfortune after another is the issue Google anxious about that Adobe is abandoning Flash on not just mobile but TVs as well.¹⁸ This causes a great impact since Google TV adopting lots of Adobe's technology and Google TV would be facing its hardest time than ever¹⁹.

¹⁷ “Google censors itself for China”. BBC News. Wednesday, 25 January 2006.
<http://news.bbc.co.uk/2/hi/technology/4645596.stm>

¹⁸ “Not just mobile: Adobe is abandoning Flash on TVs as well.”
<http://gigaom.com/video/flash-tv-future/>

¹⁹ “Adobe 放棄 移動 Flash Google TV 也將大改。”
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From our research, we analyzed Google successful factors by comparing business model and strategy with its competitors Yahoo! and Microsoft. Bases on four main factors, Google overcome both dot-com bubble and global financial crisis in 2008. Due to the fast-moving, changeable, and unpredictable internet ecosystem, we see all of these three companies trying to broaden its product extension – making its platform bigger and bigger, and trying to even change its business strategy through acquisitions, and affiliates such as Microsoft forging an alliance with Yahoo!. From Google’s successful case, we realize the enterprise needs to focus more on developing and sustaining it core competence and core value.

For future research on this topic, we would suggest observing other internet business model and strategy which can compete with Google. Also, Google has successfully cultivated in mobile and cloud computing area. Nowadays, either smartphone or tablet is popular in people daily life so that the emergence of “Mobile Cloud Computing” becomes the new trend. More research on mobile and cloud computing even mobile cloud are great topics for Google to study for and to discuss if Google can sustain its competence over those trends.



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