

ANALYSIS OF APPLE'S COMPETITIVE ADVANTAGE: AN RBV PERSPECTIVE

THI NGOC THUY DOAN¹, MINH TUAN PHAN²

¹Faculty of Economics - Business, Hoa Sen University, Vietnam

²Faculty of Economics - Business, Hoa Sen University, Vietnam

Corresponding author: Thi Ngoc Thuy Doan

ABSTRACT

Apple Inc., formerly known as Apple Computer Inc., is a multinational corporation headquartered in Cupertino, California. Products like the iPod, iPhone, and Macintosh computers have made Apple a giant name in the IT industry. The case study uses the resource-based view (RBV) to analyze the internal resources that create the competitive advantage for Apple. Apple's two most important resources are: (i) a Strong focus on R&D, (ii) A complete ecosystem of products/services. Using the VRIO framework, these resources are analyzed based on four criteria: Valuable, Rare, Costly to Imitate, and Organized to Capture Value.

1.0 INTRODUCTION

Apple Inc., previously known as Apple Computer Inc., is a global American company that develops and produces consumer electronics and software products. The iPod, the iPhone, and the Macintosh computers are some of the most well-known pieces of hardware that the corporation produces. Apple's software includes the Mac OS X operating system; the iTunes music player, etc. In addition, the company operates a number of online stores, the iTunes Store, as well as hundreds of physical stores in a variety of countries (New World Encyclopedia, 2022).

Apple Computer, Inc., established in Cupertino, California on April 1, 1976, by Steve Jobs and Steve Wozniak, went under that name for its first 30 years until dropping the "Computer" on January 9, 2007, to represent the company's further development into the consumer electronics sector. Apple Inc. has made a name for itself in the consumer electronics market with its distinctive design and advertising campaigns (Apple, 2022).

In August of 2018, Apple surpassed the \$1 trillion mark, making it the first publicly listed firm in the United States to reach that milestone. In August 2020, its value was \$2 trillion, and by January 2022, its value had increased to \$3 trillion (Apple, 2022).

In light of Apple's position as the world's most valuable company, the case study uses the resource-based view (RBV) to analyze the internal resources that create the competitive advantage for Apple. Using the VRIO framework, these resources are analyzed based on four criteria: Valuable, Rare, Costly to Imitate, and Organized to Capture Value.

2.0 LITERATURE REVIEW AND RESEARCH METHODS

The case study will use the resource-based view (RBV) proposed by Barney in his well-known 1991 article "Firm Resources and Sustained Competitive Advantage" to analyze the internal resources that create the competitive advantage for Apple.

After the publication of seminal works in the 1980s and 1990s, such as those by Wernerfelt, B. ("The Resource-Based View of the Firm"), Prahalad, and Hamel ("The Core Competence of The Corporation"), Barney, J. ("Firm Resources and Sustained Competitive Advantage"), and others, RBV emerged as a strategy for gaining a competitive advantage.

The proponents of this point of view argue that rather than concentrating on the external competitive environment, organizations should pay attention to internal sources of competitive advantage. RBV supporters argue that using current resources in a novel manner to take advantage of external chances is far more practical than attempting to develop new abilities for each opportunity.

Barney (1991) outlined four characteristics that a firm's resources must have to serve as a source of sustained competitive advantage. He asserts that the resources must be valuable, rare, imperfectly imitable, and non-substitutable. His first framework was known as VRIN. In 1995, in his later work "Looking Inside for Competitive Advantage" Barney presented the VRIO framework, an enhancement of the VRIN paradigm. The VRIO analysis includes:

Valuable: A resource provides value if it enables a business to take advantage of opportunities or protect itself from risks.

Rare: Rare resources are those that can only be obtained by one or a small number of businesses.

Costly to Imitate: If other companies cannot duplicate, purchase, or replace the resource with a fair price, then it is costly to imitate.

Organized to Capture Value: Only a company with the ability to organize the process of creating valuable, uncommon, and inimitable resources can maintain a competitive edge

A resource or capability that meets all four requirements can bring sustained competitive advantage to the company.

Apple's two most important resources are: (i) Strong focus on R&D, (ii) A complete ecosystem of products/services. Using the VRIO framework, these resources are analyzed based on four criteria: Valuable, Rare, Costly to Imitate, and Organized to Capture Value.

3.0 CASE ANALYSIS

It is vital to note that resources in the VRIO framework are generally defined to cover any assets as well as any skills and competencies of a firm. Apple's two most important internal resources are: (i) **Strong focus on R&D**, (ii) **A complete ecosystem of products/services**.

3.1. Strong focus on R&D

Apple has invested much in R&D to ensure that it remains at the forefront of the technology, consumer electronics, software, and online service industries. Indeed, the company's success in competing in the market rests significantly on its ability to provide competitive goods, services, and innovations on a consistent and timely basis.

Apple has maintained a steady R&D budget. In 2018, Apple invested \$11.6 billion (5.1% of sales) in R&D. When compared to R&D expenditures in 2017, this represents an increase of 15.3 percent.

Figure 1: Top R&D Spenders

RANK		R&D spending			
2018	2017	Company	2018 US\$ Billions	% of Revenue	Change from 2017
1	1	Amazon	\$22.6	12.7%	40.6%
2	2	Alphabet	\$16.2	14.6%	16.3%
3	5	Volkswagen	\$15.8	5.7%	14.1%
4	4	Samsung	\$15.3	6.8%	6.8%
5	3	Intel	\$13.1	20.9%	2.8%
6	6	Microsoft	\$12.3	13.7%	-5.7%
7	9	Apple	\$11.6	5.1%	15.3%
8	7	Roche Holding	\$10.8	18.9%	-8.7%
9	12	Johnson & Johnson	\$10.6	13.8%	16.0%
10	8	Merck	\$10.2	25.4%	0.8%
11	11	Toyota	\$10.0	3.9%	2.6%
12	10	Novartis	\$8.5	17.0%	-11.1%
13	15	Ford	\$8.0	5.1%	9.6%
14	20	Facebook	\$7.8	19.1%	31.0%
15	14	Pfizer	\$7.7	14.6%	-2.7%
16	13	General Motors	\$7.3	5.0%	-9.9%
17	16	Daimler	\$7.1	3.6%	-9.2%
18	19	Honda	\$7.1	5.4%	8.7%
19	24	Sanofi	\$6.6	15.1%	5.8%
20	23	Siemens	\$6.1	6.2%	4.9%
TOP 20 TOTAL			\$214.5	11.6%	7.3%

Note: Sums may not equal totals shown due to rounding.

Source: Capital IQ data, Thomson Reuters Eikon data, Strategy& analysis

Adopted from <http://macdailynews.com/2018/11/29/apple-invested-11-6-billion-in-rd-this-year/>

The fields that Apple spends its R&D (Leswing, 2017; Niu, 2017):

3.2 A growing product portfolio

Increases will be made in R&D for Apple's many products. Since Apple offers a wider variety of products, more R&D into expanding its software ecosystem is necessary.

3.3 Investing in services

The expansion of Apple's services sector has necessitated substantial capital expenditures on R&D to meet the needs of its huge customer base. Services like iCloud, Siri, and Maps benefit from Apple's R&D expenditures.

3.4 More in-house development

Apple has developed a number of its most important technologies in-house. The A-series of processors is its most notable feature, and it is quite costly to develop processors. Apple is no longer at the mercy of its suppliers when it comes to determining the future of its products thanks to this move. For instance, Apple's Mac OS X is still heavily reliant on whatever Intel has planned for its future.

3.5 Future products

Currently, Apple is focusing its efforts on projects that do not directly contribute to the company's bottom line. However, costs have real implications and may shape a business's destiny. For instance,

- It is the Apple car that has been spoken about for years. Apple still has hundreds of staff working on the project, despite allegations that it is shifting its attention to self-driving software rather than a whole electric vehicle.
- R&D funds are being allocated to augmented reality (AR) technologies that merge virtual elements with the physical environment. Apple is hard at work on its kind of augmented reality goggles.
- Something related to medicine, such as a brand-new method of consulting with physicians or enhanced health features on the Apple Watch.

a. Valuable

Massive expenditures on R&D of cutting-edge technologies have raised hopes of an improved consumer experience. Apple's massive user base means that the company's R&D efforts have the potential to provide large-scale improvements to the user experience.

For instance, Apple has prioritized R&D by establishing the foundation for a secure network. One recent use of biometric security, which employs a user's physical characteristics as opposed to a password, is Apple's Face ID system for the new iPhones. This is a really

helpful addition, since it will make consumers' iPhones safer, and it is also quite fast, as the new iPhone X can identify its owner in under a second just by looking at their face.

Another instance is that of healthcare. An integral aspect of Apple's plans for apps, services, and wearables is now expanding into research on medical device manufacturing to create personal health records. Apple is attempting to merge the fields of health and fitness to produce something that would attract more consumer interest. In the health app, the first screen displays a calendar and a step counter, both of which are checked regularly. Giving users a reason to interact with the app is a big step in that direction. Health indicators including exercise, diet, and sleep duration are monitored and quantified on the second health page. Apple's products help millions of people all around the world live healthier lives (Cbinsights, 2019).

b. Rare

Due to the high financial and human resource expenses of doing extensive R&D, only a few businesses can compete with Apple. Figure 1 displays the top 20 R&D expenditure companies throughout the globe in 2018, with Apple coming in at number seven with 2018 R&D spending of \$11.6 billion.

c. Costly to Imitate

It is quite expensive to try to copy Apple's R&D strategies and expenditures. Because of "intellectual property protection" and "path reliance", Apple can profit from the isolation mechanism.

Apple has over 75,000 patents to safeguard its intellectual property. Apple was granted 2,160 patents in the United States in 2018 (Walker, 2018). Other firms have an uphill battle when they try to compete with Apple because of its extensive patent portfolio, which includes some revolutionary ideas.

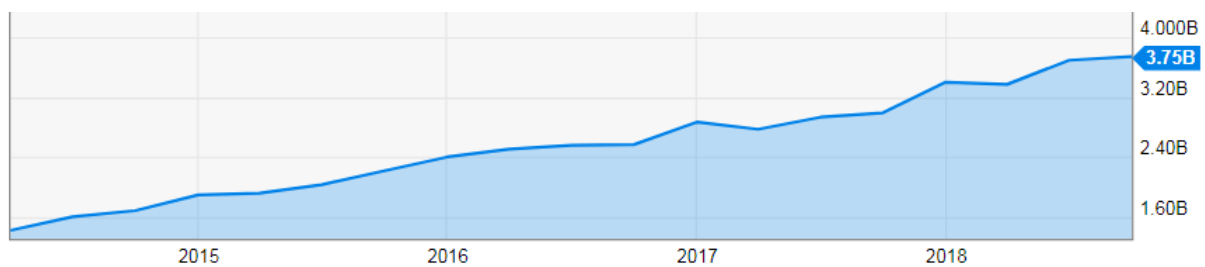
Figure 2: Leading patent recipients

International Business Machines Corp	9100
Samsung Electronics Co Ltd	5850
Canon Inc	3056
Intel Corp	2735
LG Electronics Inc	2474
Taiwan Semiconductor Manufacturing Co (TSMC) Ltd	2465
Microsoft Technology Licensing LLC	2353
Qualcomm Inc	2300
Apple Inc	2160
Ford Global Technologies LLC	2123

Adopted from <http://fortune.com/2019/01/07/ibm-tops-2018-patent-list-as-ai-and-quantum-computing-gain-prominence/>

The underlying assumption is that the push will not be successful if a company spreads out its effort and investments in R&D over a longer period, despite management's ability to condense R&D into a shorter time. Due to time compression diseconomies, attempting to attain the same goal in less time—even with more investments—usually yields worse outcomes (Rothaermel, 2017). As a result, R&D must be ongoing, and present competencies must be continuously maintained and improved. Other businesses that lack continuous investments in R&D will not be able to catch up with Apple. As shown in Figure 3, Apple has traditionally made significant R&D investments.

Figure 3: Apple R&D Expense (Quarterly)



Sept. 30, 2018	3.75B	June 30, 2012	876.00M
June 30, 2018	3.701B	March 31, 2012	841.00M
March 31, 2018	3.378B	Dec. 31, 2011	758.00M
Dec. 31, 2017	3.407B	Sept. 30, 2011	645.00M
Sept. 30, 2017	2.997B	June 30, 2011	628.00M
June 30, 2017	2.937B	March 31, 2011	581.00M
March 31, 2017	2.776B	Dec. 31, 2010	575.00M
Dec. 31, 2016	2.871B	Sept. 30, 2010	494.00M
Sept. 30, 2016	2.57B	June 30, 2010	464.00M
June 30, 2016	2.56B	March 31, 2010	426.00M
March 31, 2016	2.511B	Dec. 31, 2009	398.00M
Dec. 31, 2015	2.404B	Sept. 30, 2009	358.00M
Sept. 30, 2015	2.22B	June 30, 2009	341.00M
June 30, 2015	2.034B	March 31, 2009	319.00M
March 31, 2015	1.918B	Dec. 31, 2008	315.00M
Dec. 31, 2014	1.895B	Sept. 30, 2008	298.00M
Sept. 30, 2014	1.686B	June 30, 2008	292.00M
June 30, 2014	1.603B	March 31, 2008	273.00M
March 31, 2014	1.422B	Dec. 31, 2007	246.00M
Dec. 31, 2013	1.33B	Sept. 30, 2007	207.00M
Sept. 30, 2013	1.168B	June 30, 2007	208.00M
June 30, 2013	1.178B	March 31, 2007	183.00M
March 31, 2013	1.119B	Dec. 31, 2006	184.00M
Dec. 31, 2012	1.01B	Sept. 30, 2006	179.00M
Sept. 30, 2012	906.00M	June 30, 2006	175.00M

Adopted from https://ycharts.com/companies/AAPL/r_and_d_expense

d. Organized to Capture Value

Apple's remarkable products are made possible by the company's excellent R&D infrastructure. Here are a few qualities shared by Apple (Interaction Design Foundation, 2018).

3.6 The Design Teams are Independent of the Main Corporation

A design team is separate from the rest of the Apple Company as they work on a new device. The group is now detached from the traditional hierarchical structure of Apple as well. They devise their own reporting methods and provide the executive team with their direct reports. Because of this, they are able to focus on design rather than on doing mundane work.

3.7 A Documented Development Process

Before a team of product developers can go to work, they must be briefed on Apple's New Product Process (ANPP). It is highly thorough and describes in great depth every design step. The purpose of this document is to lay out the steps that will be taken to develop the product, who will be in charge of making sure it gets to the market, where and when each member of the development team will be stationed, and so on.

3.8 Monday is Review Day

The Apple executive team meets every Monday to discuss the status of all of the company's current product designs. Instead of spreading them out among many unpromising endeavors, resources are poured into a few with the best chance of success.

If a product can be discussed in a given meeting, it will be moved to the top of the agenda for the next one. This should translate into a minimum of a twice-monthly inspection of all Apple products by the company's top management. This allows the organization to take a minimal approach to design and reduce decision-making delays.

3.9 The EPM and the GSM

The EPM (Enterprise Performance Management) is responsible for the engineering program, whereas the GSM (Global Supply Management) oversees supply operations worldwide. Once a product has moved from the design phase into manufacturing, it is its responsibility to take over.

Apple works with third-party contract manufacturers like Foxconn to produce the goods. For Apple, this means less hassle during production and lower overall production costs. This strategy has proven to be quite successful in the consumer electronics industry, and it is being adopted by a growing number of competing firms.

3.10 A Launch Plan

Apple's product introduction serves as the company's last stage of development. When the quality of the product has been maximized, it enters a phase of the process known as "the Rules of the Road". Here you will find a detailed description of your roles and the steps you must perform before releasing the product to the public. You will be fired on the spot if you misplace or divulge this information. The text of the paper provides the necessary context for

understanding this. In addition, Apple has constructed or announced plans to build R&D facilities in Japan, China, Indonesia, France, Japan, Sweden, and the United Kingdom, greatly expanding the company's R&D capabilities (Leswing, 2017).

3.11 A complete ecosystem of products/services

The term "ecosystem" refers to a group of interacting species in a biological community. In the world of technology, this refers to a collection of gadgets that function together as a network. However, no firm has accomplished it like Apple with the Apple Ecosystem. Many businesses utilize this to develop a "family" of goods.

Hardware products: Apple Inc. is a technology company best known for its iPhone and iPad, Mac personal computers, iPod portable music players, Apple Watch smartwatches, Apple TV digital media players, and HomePod intelligent speakers.

Software: Mac OS X and iOS, the iTunes music player, the Safari web browser, the iLife, and iWork creativity and productivity suites, and more advanced programs like Final Cut Pro, Logic Pro, and Xcode are all developed and distributed by Apple.

Online services: The iTunes Store, the Apple App Store, the Mac App Store, Apple Music, and iCloud.

Figure 4: Apple Ecosystem



Apple's Wide Services Offering

Apple Brand / User Experience

Apple's hardware innovation in services gives the company multiple strategic, industrial and customer advantages.



Source: Company data, Credit Suisse estimates

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Adopted from <https://research-methodology.net/apple-ecosystem-closed-effective/> and <http://www.jaguaranalytics.com/home-post/apple-aapl-not-a-one-trick-ipony/>

a. Valuable

Due to its illustrious emphasis on the customer experience, the Apple Ecosystem is valued.

- We will have the easiest time keeping our gadgets, services, and data up to date if we utilize a Mac, iPad, and iPhone. Simply configure iCloud. No one provides such a thing these days. A comparable environment will eventually be available from Google. However, Apple will also be able to increase the size and scope of its ecosystem in that period.
- When we purchase an iPhone, we are more likely to utilize Apple's services and applications, such as Calendar, Reminders, Notes, iTunes, etc. As soon as customers input their iCloud credentials on an iPad after purchasing it, these services (and data) are there mysteriously. All of this is also accessible later on if they purchase a MacBook. Today, only Apple can provide such a rich and varied experience. These consumers' experiences become progressively better when they purchase more Apple products.
- App Store: Everyone wants to ensure sure their programs are accessible through the App Store, even tiny startups, Google, and Microsoft. We can find many applications in the App Store for all of our everyday tasks, including working, learning, and having fun. Android often offers a worse user experience.

b. Rare

Because it requires time, significant money, and in-depth knowledge of technology, only a few firms can construct such a full and premium ecosystem of products/services as Apple. Apple is becoming a "hub-firm", playing a pivotal role in economies throughout the world (Lansiti & Lakhani, 2017). Alphabet/Google, Amazon, and Facebook may be among the only corporations that can compete with Apple on a global basis.

c. Costly to Imitate

The expense of replicating Apple's commercial environment is quite high. Because of this "path dependence" isolating mechanism, few businesses can afford to follow Apple's road of investing heavily in infrastructure, marketing, and customer service (due to limitations in money, time, and human capital).

d. Organized to Capture Value

To further control its ecosystem, Apple has developed a strict hierarchical structure. The Apple management team has complete authority over all departments thanks to the company's hierarchical structure. Because of this, strategic management can be implemented quickly and effectively, and the company as a whole may begin to function as a unified unit.

4.0 CONCLUSIONS

Apple Inc., based in Cupertino, California, is an American multinational technology corporation that focuses on consumer goods, software, and online services. In 2021, Apple's revenue was US\$365.8 billion, making it the largest technology firm in the world. As of June 2022, Apple was the largest corporation in the world by market capitalization, the fourth largest PC vendor by unit sales, and the second largest mobile phone maker. Along with Alphabet, Amazon, Meta, and Microsoft, it is one of the Big Five American IT corporations.

To understand how Apple's internal resources translate into a competitive advantage, the case study used the resource-based perspective (RBV). What sets Apple apart from its competitors are: (i) Strong focus on R&D, (ii) A complete ecosystem of products/services.

The managerial implication from this study is that if new businesses want to be successful, they have to invest in R&D because innovation, invention, and development are all fueled by R&D efforts. Besides, financial investment in R&D may yield profitable discoveries. In addition, businesses should also build an ecosystem of products/services which can solve all of the needs of the customers. This helps improve brand loyalty and advocacy.

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