

The Core Competentness of Apple Inc

Weiyu Tian^{1, *, †} Mengyao Wang^{2, *, †} Qichun Wang^{3, *, †}

¹ College of Commerce, Zhejiang Gongshang University, Hangzhou, 311599, China.

² Management School, Lancaster University, Lancaster, LA1 4YH, UK.

³ Business school, Southwest Minzu University, Chengdu, 610000, China.

*Corresponding author email: m.wang20@lancaster.ac.uk; wangqichun@stu.swun.edu.cn; tianwwyy@126.com

†These authors contributed equally

ABSTRACT

Apple Inc. is one of the most competitive enterprises in the world, and its rather unique internal business strategy and business philosophy have created strong industrial advantages for Apple. In the industry with the rapid development of science and technology and increasingly fierce competition, the secret behind Apple's long-term competitiveness is of great reference value and research significance. At the same time, there are a large number of enterprises in the industry without cause internal friction, enterprise strategic planning disarray, high-tech market is full of blindly copied products and malicious competition. This paper through the analysis of the company and the main competitors in the industry of open data, combined with a large number of third-party support documents and reports. This paper holds that Apple's competitiveness is based on multiple advantages and achieved through the joint efforts of various parties, which is realized by the highly unified marketing, innovation and operation within Apple. Fundamentally speaking, Apple's brand image, organizational structure and corporate culture are highly harmonious and mutually promoting. The research on Apple's core competitiveness in this paper can effectively guide manufacturers and enterprises in the industry to cultivate their unique core competitiveness and guide the sustainable and healthy development of high-tech industry. At the same time, our research has positive reference significance for other industries and other companies facing innovation bottlenecks and marketing inefficiency.

Keywords: Research and Development, Innovation, Patent, Marketing

1. INTRODUCTION

Since the rapid development of economic, internet and technology, people's need of electronic equipment are increasing rapidly. This situation provides Apple Inc the chances to increase their sale of products like iPhone and Mac, which may bring considerable profit to the company. However, potential threat and risk should also be considered. Nowadays, more and more substitute products or services come into digital market. Although Apple's advanced technology such as chips or some other things are hard to be substituted. However, with the development of technology, many new high-quality brands came into the market and has the same using experience like Apple with cheaper price. Since transfer price fall, customers may be more willing to choose a cost-benefit product. So, competition in high-tech industry is becoming more and more fierce in recent year [1].

With a simple logo of apple, the company has its

unique brand image through using its excellent innovation ability. Initially, Apple is solely a company that only manufacture computers. In order to deal with the threat that pose by rivals like INTEL, Microsoft and other competitors[2]. Apple dedicated to research and development, and gradually invent many new products that bring new using experience to customers. For example, Apple invented iPod in 2001, which find a new way to sale music [2]. Besides, Apple also invented new technology like iPhone, iPad, Mac etc. Apple also invented many related services like Apple care, iCloud etc. Through company's innovative business model and the new marketing strategies, with its unique design aesthetic and advanced technology concept, Apple has

gradually become a sign of high-end and fashionable. It has developed into the world-famous high-end high-tech enterprise successfully.

This paper will analysis Apple Inc. from some parts. Firstly, some bar charts will be used to present Apple's investment on research and development, such as

expenses and patents. Compared with other high-tech enterprises will be used to demonstrate how research and development play an important role in Apple's business strategy. Also, some problems and risks that Apple may have according to their Statement of Finance and Position are also pointed. Besides, the innovation which is also the most competitive advantage of the company will be discussed from patent situation, patent characteristic and its innovation capability. Finally, we will also analysis Apple's marketing strategies. Apple is always good at making proper and accurate strategy to market their products and services. For instance, the hungry marketing.

In today's competitive market, Apple still take its role of leader in high-tech industry with the use of its core competitive factors. Through analyzing apple's core competitive factors and its business strategy, we can find the answer. By analyzing apple's success, other companies can learn from it, helping them adjust their fitting business strategy and build their own unique brand image to attract and solid their loyal customers in the fierce competition of digital market.

The following paper will be divided into four parts. The first part is accounting analysis. The second part is the analysis of Apple's innovation. The third part is the analysis of Apple's marketing. The last part is the conclusion of analysis.

2. ACCOUNTING ANALYSIS

2.1. Research and Development Expenses

According to the 10K form published by Apple Inc in 2020, the expenses on research and development(R&D) are 14.2, 16.2 and 18.7 billion dollars from 2018 to 2019. It shows an upward trend. The year-over-year growth in R&D expense was driven primarily by increases in headcount-related expenses. And the company continues to believe that focused investments in R&D are critical to its future growth and competitive position in the marketplace, and to the development of new and updated products and services that are central to the Company's core business strategy.

The paper researched data from the financial statements of some competitors of the company in the electronic field from 2018 to 2020, includes Samsung,

Huawei, Dell, Intel, Alphabet, Sony, Microsoft and HPE. The expenses of Samsung, Huawei and Sony in the original financial statements are recorded in Korean won, Chinese yuan and Japanese Yen respectively. The following figures are transferred into US dollars based on the interest rate on the specific year.

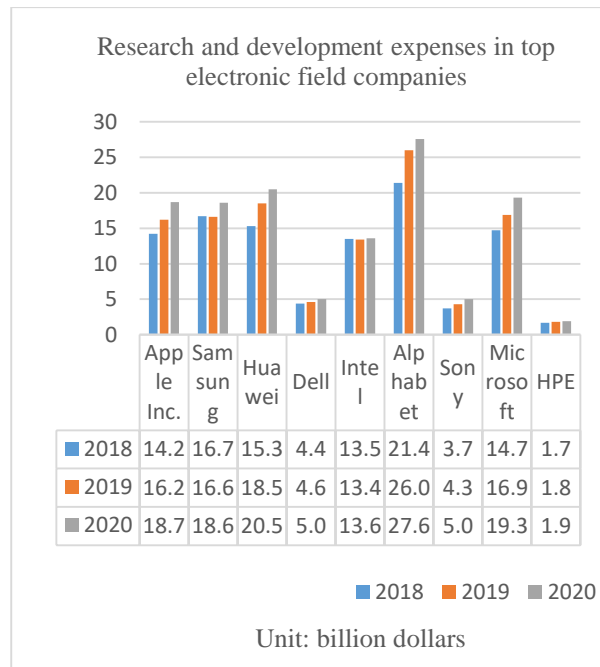


Figure 1 The bar chart shows the R&D expenses of Apple Inc and the other competitors in the electronic fields company.

The average figure of the R&D expenses is 11.7, 13.1 and 14.5 billion dollars from 2018 to 2019. It shows that the company is at a relatively high level in the industry.

2.2. Ratio Analysis

2.2.1. Return on assets (ROA)

The return on total assets shows a slightly upward trend in the past three years, increased from 16.28% in 2018 to 17.73 in 2020. It's a relatively stable but healthy indicator for the company. Compare to other competitors in the industry, Apple Inc has a good ROA and has strong competitiveness.

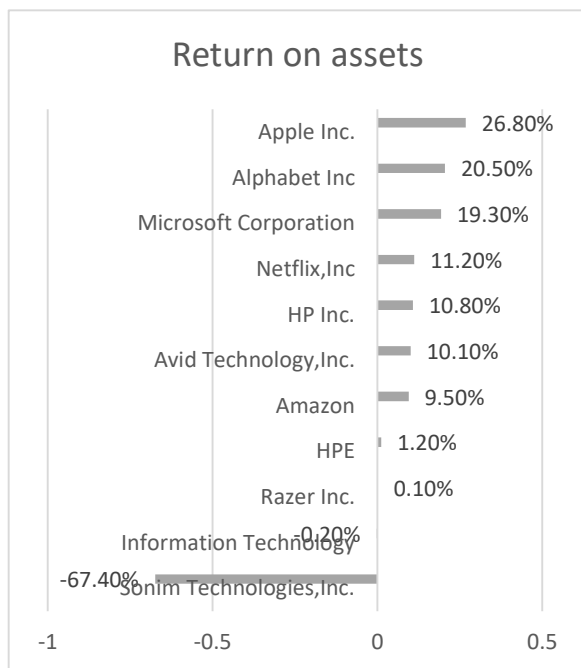


Figure 2 The figure shows ROA from Apple and its competitors on high-tech fields are cited from Find box [3]

2.2.2. Return on Equity (ROE)

The total return on equity has dramatically increased from 49.36% in 2018 to 73.69% in 2020, which indicates that the company could generate more profit from shareholders' equity. In the industry, Apple Inc also more competitive than other companies on ROE.

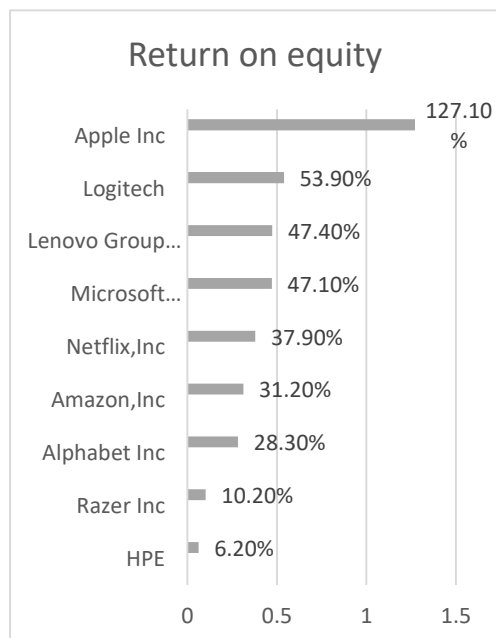


Figure 3 The figures show the ROE of Apple and its competitors are cited from find box (2021) [4]

2.3. Subsidy

According to the subsidy tracker, Good Jobs First.

In the top 100 companies who got the most subsidy from federal, state and local awards since 2009, Apple Inc ranked 59th. The company got 26 times subsidy from the state, top 5 are the Texas, North Carolina, Nevada, Oregon and low. The total subsidy are 8.2 million dollars. 14 times are tax credit from the government state, it is the most type of the subsidy. However, the most amount type of subsidy is mega deal from the government, account for 7 million dollars of the total subsidy.

3. INNOVATION OUTPUT

3.1. Patent situation

Apple's business model is "Intellectual property intensive", meaning that apple's high profits are based on intellectual property. In fact, Apple has long been committed to technological innovation and patent application, and so far, Apple has achieved a huge advantage in this area.

According to data published by IFI CLAIMS Patent Services, a global Patent database provider, Apple was awarded 2,792 patents in the United States in 2020, placing it eighth in the world.

In fact, Apple believes the ownership of intelligence property rights is an important factor in its business. Such remarkable achievements were also mentioned by Apple, which revealed that this company held a broad collection of intellectual property rights to certain aspects in its 2020 annual report [1]. As of the completion of this article, Apple Has accumulated more than 36,000 patents in the United States, which are widely used in all aspects of apple's product design, development and production.

At the same time, Concealment and confidentiality are important characteristics of the company's patents. Secrecy is so crucial inside Apple that the company's chief legal officer does not even have the right to know how the company's next generation of products will be designed, and outside lawyers filing patents on those designs are supposed to report directly to the engineering department. In addition, apple may even set up another unknown wholly owned subsidiary as the owner of the intellectual property in order to avoid the strategic intent of the company be revealed by the government's disclosure of the patent names and contents.

In addition, it often takes a long time for Apple's patents to be translated into practical product features. In fact, this is not the result of apple's lack of research and development capabilities. On the contrary, it shows apple's patience and confidence in product development. In the process of product research and development, Apple always pays more attention to product reputation

and quality. Regardless of cost, and respects technology, which makes Apple always willing to spend more time to improve product quality. On Apple's website, there is a design-oriented video that shows how the company designed iPadOS pointer to complement touch input. For such a simple and marginal feature, Apple was willing to assemble a team of a dozen experts, which ultimately took more than a year to complete. This shows another feature of Apple's patents, a willingness to lead to a better user experience with longer development cycles.

3.2. Determinants over innovation

A large number of patent rights prove Apple's outstanding innovation ability, which is jointly promoted by the company's profound talent reserve, scientific organizational structure and positive corporate culture.

3.2.1. Talent resources

The rich top talent resources in various industries are an important guarantee for Apple's innovation ability. Just in the field of acoustics, Former B&W managers, BOSE chief engineer, JBL Professional chief acoustic engineer, all of whom are still or have been working in Apple's acoustic division. Apple from many universities and famous acoustics factory to dig a large number of first-class acoustic talents, formed a strong acoustic research and development team. In fact, this world's largest acoustic and audio team is and will continue to provide impeccable sound quality for Apple products.

Quality over quantity is an important feature of Apple's talent pool, and Apple has a strong sense of elite culture. Steve Jobs even said that one excellent employee is worth fifty mediocre ones. Facts have proved that this method of attracting more excellent talents to join Apple is very suitable for Apple. Indeed, more and more talents are inspired by this special culture and choose to join Apple.

Higher salaries are another important factor in attracting talent to Apple. Due to confidentiality agreements, Apple employees' compensation and benefits packages are often closely guarded. However, according to some media reports and other sources, it is convincing that Apple's compensation packages must be very competitive in the industry.

3.2.2. Organizational structure

Apple's organizational structure creates the conditions for innovation. Apple's organization structure is completely different from that of most large companies, which the general manager supervises the manager. Apple empowers domain experts to make decisions in their respective fields.

Apple's organizational structure supports experts leading experts to the maximum extent, and technical

decisions are only discussed and made technically without interference from administrative personnel [5]. Hardware experts lead hardware, software experts lead software, and design experts lead design. This organizational structure greatly aroused the innovation enthusiasm of various Business departments, Experts are given the freedom to take bold and Rational risks to achieve breakthroughs.

Apple doesn't measure the bottom line of any one division, just the overall earnings that show up on the company's income statement. This structure reduces barriers to collaboration, with no department being held responsible for losses or cost increases on any one product, providing a great guarantee that each unit will focus on technology.

3.2.3. Company culture

Apple's innovation culture is also significant, innovation at Apple is culture-driven rather than process-drive. Many of Apple's successful ideas come from people with no formal title or low hierarchy. It's really a reflection of the corporate culture that everyone is encouraged to come up with new ideas.

'You can't do much in life, so everything has to be amazing,' Mr. Jobs said in an interview. In fact, striking for perfection is also an important feature of Apple's corporate culture. The environment of speaking out freely is not enough to truly catalyze innovation. The continuous pursuit of technology and products is another key for Apple to maintain its innovative spirit.

Without doubt, this kind of innovative corporate culture has become a label of Apple, and also an internal driving force of the enterprise's innovation ability.

3.2.4. Hiring policy

Confidentiality is strictly enforced by Apple in every aspect of the enterprise. Apple has strict confidentiality contracts with interns, full-time employees, and even those who are passed over for job interviews to protect apple's trade secrets.

On the one hand, although Apple has set up two parts of job opportunities and job creation on its official website, the content in these two parts mainly describes the company's work philosophy and working environment, and lacks specific description of hiring policies and procedures. On the other hand, it may still be possible to piece together a sense of Apple's hiring process and policies based on articles and social media comments from some former employees of Apple or anonymous insider.

Anecdotal evidence seems to support the fact that apple interviews are often organized individually by each project team, with the HR department always seems not

involved in the interview process and has little impact on the final outcome. To some extent, the result of the interview is subjective, but this mode greatly ensures the synergy and cooperation effect of the project team, which helps Apple select more suitable talents.

Apple, meanwhile, always prefers candidates who can prove they can learn in a short period of time or have a strong technical background. One comment on social media even noted that Apple might require applicants to dispense with formal attire and opt for something more comfortable or personal.

To sum up, these unique hiring preferences and hiring methods exclude some talents to a certain extent but ensure employees' sense of identity and ownership of the enterprise, provide a large number of talents for various departments and project teams, and also help the enterprise to maintain a high level of innovation ability to a large extent.

3.3. Corporate social responsibility

First, The excellent user privacy protection of Apple products has always been one of the main selling points of them. In Apple China CSR Report 2020-2021, Apple made it clear that it is not easy to give users full control over their information, but they believe it is true innovation.

Second, Apple has long been committed to holding innovation and entrepreneurship competitions for college students around the world, carrying out student innovation activities and helping to cultivate innovative talents.

Third, Apple has long been committed to promoting environmental awareness and low-carbon lifestyle. This philosophy is also reflected in their production process. Apple promotes environmental protection by developing more environmentally friendly materials, promoting more energy-efficient production methods and adopting better chemical processes. Apple's innovation ability provides feasibility for better realizing social responsibility [6].

4. MARKETING

4.1. The Apple Marketing Philosophy

Markkula, The man at The heart of Apple's early days, lays out his principles in a one-page essay called "The Apple Marketing Philosophy" in 1977 , which stresses three points: empathy, focus and impute [7]. Although Markkula left Apple years ago, these three key principles have continued to influence Apple.

4.1.1. Empathy

Understanding customers' needs, and even directing

their needs, is what Apple has been trying to do for years.

At one point in his life Jobs was asked why he didn't do market research, to which he made it clear that he trusted Apple's own judgment rather than listening to its customers. And this is not because Apple is arrogant or has worked behind closed doors. It is not inconsistent with the marketing strategy of the company. Consumers often do not realize what they really need, and they do not understand the current level of technological development. Apple does not rely on market research but has an accurate grasp of consumers' pain points and the ability to deeply understand the needs of target groups. In fact, guiding customers to discover their own needs is a very important part of Apple's marketing strategy, and this strategy is deeply influenced by empathy.

4.1.2. Focus

Apple's focus means they focus on the resources at hand and not much on other things. This focus on production is reflected in the fact that Apple has so far only focused on a limited number of products like the iPhone and iPad, and in the PR department, where the company's PR staff is strictly forbidden to answer questions unrelated to the company. And in Apple's marketing, focus is also reflected in several ways [8].

First of all, Apple is often not keen on choosing popular stars as spokespeople around the world. On the one hand, it may require Apple to pay huge and premium fees for spokespeople, and on the other hand, Apple has to bear the risk of bad reputation of spokespeople, which is obviously not in line with Apple's marketing strategy.

Apple attaches great importance to the reputation, in the past for a long time, between users of word-of-mouth marketing is an important part of the apple to maintain and strength in sales growth. Today, apple has accumulated a lot of fans around the world, many apple fans have their own blog or twitter, a lot of people like their presentation of apple products, that has helped drive Apple's popularity. In fact, this marketing relies so much on Apple's superior product quality that the company doesn't even have to spend time or effort on it to reap sales growth.

4.1.3. Impute

How to transform high-quality products and technologies into striking and attractive displays is the problem that Apple needs to solve in marketing. The impute strategy actually solves this problem.

If we look back at the history of Apple's advertising, from the release of MAC in 1984 and the proposal of Think Different to the best advertisement of the 66th Emmy Award in 2013, all the advertisements produced by Apple are classic cases in the history of the world's advertising communication.

Apple's marketing is full of humanistic care, focusing on the combination of aesthetics and high-quality creativity. The most valuable thing is that every advertisement of Apple has a strong apple imprint. This kind of Apple aesthetics has attracted a lot of fans around the world, and many companies outside the industry are even competing to learn and imitate.

4.2. Apple store

Apple stores are an important part of Apple's marketing. In Istanbul, Shanghai, New York and a growing number of other cities, apple stores have become the local landmarks. The Apple Store has created so much mythology around the world that it has become one of the company's most famous labels.

Although Apple often claims that its products are not luxury goods, the location and design of apple stores, and even the services that customers can enjoy in Apple stores, are exactly in line with the concept of luxury flagship stores.

Before actually walking into an Apple Store, the appearance will give customers the first impression of the store. In terms of external design, any Apple Store in the world absolutely sticks to the minimalist design language, but at the same time, in different cities and different spaces, Apple is good at combining its own unique brand language and environment, thus bringing classic architecture one after another.

On the Champs-Élysées in France, the Apple store almost blends into the Ottoman architecture. Its exterior wall lacks any Apple logo and is so consistent with the ancient architecture that you wouldn't even notice it if you just glanced at it. But the Apple Store on New York's Fifth Avenue is one of the city's most iconic buildings. It's made entirely of glass, it's technological and futuristic, and the minimalist style of Apple Store, but just bring the most gorgeous visual experience. In short, Apple does not adhere to a routine design, but is committed to bringing technology and human care and integration under a unified design language.

Minimalist style is implemented from inside to outside in Apple Store. When customers really walk into Apple Store, it is not difficult to find that there is a lot of blank space in Apple Store, and the open and spacious space can quickly bring customers a sense of openness and comfort. This open design does not mean that the cost of the Apple Store will fall. On the contrary, every device in the Apple Store is remarkable and expensive.

According to a bid document apple submitted detailing the store's design, Any seemingly unremarkable device in an Apple Store is likely to have been carefully customized [9]. For example, in every Apple store, Apple insists on using expensive equipment such as display tables customized by century-old wood company Fetters,

wooden benches designed by top Finnish designer Alvar Aalto, and ERCO lighting from Germany, which is regarded as the first quality in the industry. Even the seemingly ordinary Hiroshima chair at the visitor center was designed by top Japanese designer Naoto Fukasawa and cost more than \$2,500.

The service provided in the Apple Store may ultimately determine the quality of the customer experience. Genius Bar is a repair place in the Apple Store and a key part of the Apple Store. Gizmodo which is science and technology media used to expose a genius Bar training manual, and it shows that Apple's internally standardized service guidelines, called the Apple Approach, require employees to have some knowledge of psychology and the ability to analyze body language and micro-expressions, in addition to basic courtesy and solid professional knowledge.

It is worth mentioning that Ron Johnson, the former senior vice president of Apple And the key figure behind Apple Store, once published an article discussing the secret of Apple Store's success. He thinks that people come to the Apple Store for the experience.

He believes that salespeople do not focus on selling products, but on building relationships with customers and making people's lives better is the most significant point in Apple Store [10].

Apple seems to have more assumptions about Apple Store. In Dubai, Milan, Macao and more cities, Apple Store has been endowed with more functions, and Apple Store is developing towards a more community-oriented direction. More and more functional areas such as The Forum and The Boardroom, building more open city squares, and more frequent offline interactive activities all show Apple's ambition to better keep customers at Apple Store. Technology commentator Ben Thompson, writing on his Blog, calls this shift in marketing the building of an offline social network, saying Apple wants to show its customers that it has a closer connection with them [11].

4.3. Humanistic care

Apple calls itself a company "at the intersection of technology and humanity. This kind of humanism can be seen from Steve Jobs, the great former leader of Apple. On the one hand, Jobs respected technology and had a fanatical pursuit of technology, but on the other hand, he loved art deeply. He even believed that his electronic products might be outdated and eliminated, but the movies he participated in would remain forever. In fact, the humanistic care is so deeply embedded in Apple's DNA that it is reflected in many aspects of marketing [12].

In apple's previous advertisements, there were few gorgeous handsome men and beautiful women. Instead, the images of ordinary people with different skin colors

and equal gender were often used. Therefore, this is the embodiment of apple's people-oriented concept of science and technology, and also brings more universal and more life-oriented connotation to Apple's marketing.

When Apple comes out with new products, the company's presentation still shows this humanistic touch. It is entirely possible for Apple to make the best accessories in the mobility industry, apple still tends to focus more on communicating what customers can do with its products than on product parameters. For example, the packaging on the original iPod said how many songs could be stored and how long they would play, not how many GB of flash storage or milliamps of battery. These details convey apple's belief that serving customers is more important than flaunting technology, and that only products that customers can use, and love are valuable.

Apple's unique aesthetic pursuit is an unavoidable point of study. The extreme polish of the iPhone's thinness, the ubiquitous golden ratio design and the meticulous presentation of the product's interactive pages all highlight the different aesthetic pursuits of Apple and most of the companies in the industry. Apple's aesthetic pursuit has been greatly sought after around the world, and its influence has even gone beyond its industry, but has a subtle influence on other manufacturers, consumers and designers. Apple's pursuit of beauty is a pure pursuit independent of the pursuit of technological development. Different from creating technology or inventing patents, this is actually a kind of humanistic embodiment.

5. CONCLUSION

Overall, this paper based on the rapid development of society and the increasingly fierce competition in high-tech industry, analyzes and identifies the advantages and methods of Apple, aiming to provide reference for enterprises inside and outside the industry facing competition pressure and development bottleneck, and explore the general law of industry development.

The findings of this paper can be understood as Apple has achieved a high degree of unity on many levels. On the one hand, Apple inc. has a very strong profitability, which is due to its excellent reputation, stable fan base, exquisite product design and superb production capacity. Such high profits and revenues also allow Apple to do its marketing, design and innovation work regardless of cost. On the other hand, Apple is actively engaged in the realization of social responsibility, the dissemination of humanism, and the frequent construction of expensive Apple stores or poaching of top talents in the industry at high prices. These behaviors in return for apple's stable market image, virtually expand the spread and recognition of corporate values, attract potential customers, but also increase the added value of Apple' products, and provide a guarantee for Apple to maintain a very high profit space.

What's more, The internal of Apple are also highly unified characteristics. The company has established a simple communication chain, given employees full freedom of speech, and established a distinctive organizational structure, which on the one hand helps the company to promote innovation, and on the other hand reflects the company's humanism and high praise for technology. Therefore, it is consistent with the image that the company has been striving to build for a long time. It is innovative and able to guide the development direction of the industry, meanwhile, it has the humanistic care and is committed to providing undifferentiated technology services. Collectively, Apple has taken numerous measures to strengthen their advantages. But the core point is that these approaches are ultimately completely unified. In fact, Apple's corporate culture, organizational structure, strategic planning, brand image and business philosophy are highly integrated and mutually reinforcing.

Looking forward, Apple's successful experience will be more imitated and learned, and will continue to stand the test of time. The success of Apple inc. is of great reference significance and research value. However, objectively speaking, the success of some of Apple's measures may be based on the existing resources and advantages of Apple. Therefore, how to reasonably transfer the successful experience of large companies to small and medium-sized enterprises may be the focus of future research.

REFERENCES

- [1] Zhishen, C. [A case study of Apple's Brand Influence], 2021, pp 18-19. DOI: <https://doi.org/10.14097/j.cnki.5392/2021.17.006>
- [2] Yang, S. [Revelation of Apple's Innovation and Development], 2018, pp 40-41, Available at: <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2018&filename=QY YJ201812019&uniplatform=NZKPT&v=yuTTbjf5vaO54ihEzuiyyC00wYtwZsgP%25mmd2FAVqBqon0hzRywH%25mmd2B0fZ9u57Q8FKIFT74> (Accessed 23 September 2021)
- [3] Findbox, 'How does Apple's Return on Assets benchmarks against Competitors', 2021. Available at: <https://finbox.com/NASDAQGS:AAPL/explorer/roa> (Accessed 23 September 2021)
- [4] Findbox, 'How does Apple's Return on Equity benchmarks against Competitors', 2021. Available at: <https://finbox.com/NASDAQGS:AAPL/explorer/roe> (Accessed 23 September 2021)
- [5] Joel M Podolny, and Morten T Hansen. "How Apple Is Organized for Innovation." Harvard Business

- Review, 2020, 1. pp 6-8. Available at:
<https://hbr.org/2020/11/how-apple-is-organized-for-innovation>.(Accessed 23 September 2021)
- [6] Apple Inc, Environmental progress report, 2020. Available at:
https://www.apple.com/environment/pdf/Apple_Environmental_Progress_Report_2020.pdf (Accessed 23 September 2021)
- [7] Walter Isaacson , "Steve Jobs: A Biography", Simon & Schuster, 2011
- [8] Cameron. "What I Learned from 10 Years of Doing Public Relations for Apple." Business Mirror (Makati City), 2016. Available at:
https://hbr.org/2016/07/what-i-learned-from-10-years-of-doing-pr-for-apple?_lrsc=1f20e11e-1eb2-47be-baee-1d80ff7f85bf&utm_source=social&utm_medium=leap&utm_campaign=twitter&src=li-leap.
(Accessed 23 September 2021)
- [9] Apple Inc, "The Apple Store's Distinctive Design &Layout now a Registered Trademark", United States Patent and Trademark Office. Available at:
- [10] Rohn Johnson, "What I Learned Building the AppleStore." Harvard Business Review, 2011. Available at:<https://hbr.org/2011/11/what-i-learned-building-the-ap> (Accessed 23 September 2021)
- [11] Ben Thompson, "Apple's social network." Stratechery,2018. Available at:<https://stratechery.com/2018/apples-social-network/> (Accessed 23 September 2021)
- [12] Ed Catmull, "Creativity, Inc.", Bantam Books Ltd Press, 2014.