Strategic Implications of a Closed Ecosystem: A PEST Analysis of Apple Watch in the Wearable Technology Market

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Abstract. Smartwatches have become one of the most significant categories in wearable technology, with the Apple Watch emerging as the dominant product, projected to hold 20–28% of the global market by 2025 [1]. Its success stems from both product innovation and Apple's closed ecosystem strategy, which ensures seamless integration with iPhones and other Apple devices, fostering strong brand loyalty. However, this strategy also limits cross-platform compatibility, reducing adoption in Android-dominated markets. This study applies PEST analysis to examine the Apple Watch's political, economic, social, and technological environment. It highlights advantages such as ecosystem integration, advanced health monitoring, and brand equity, while identifying challenges including high pricing, short battery life, regulatory pressures, and limited compatibility. The research further explores solutions to these issues, offering insights into strategies for sustainable growth and maintaining Apple's competitive advantage in the smartwatch industry. Ultimately, this analysis underscores how external forces and internal strategic choices jointly shape Apple Watch's market position and long-term prospects.

Keywords: Apple Watch; PEST Analysis; Wearable Technology Market.

1. Introduction

1.1. Background Information

In the last 10 years, smartwatches are one of the most successful categories in wearable devices. And the Apple Watch is the most successful smartwatch product. Counterpoint Research [1] indicated that Apple will take 20-28% of the entire smartwatch market in 2025. The success of Apple Watches is not only the success of product innovation, but also the success of creative system construction strategy. Apple decided to build a closed system, which means that the Apple Watches are closely related with iPhones, iOS systems and other Apple products. This strategy gave Apple strict control on customers' experience, but also limited the compatibility with other platforms. On the contrary, many other competitors decided to build open systems, such as Google Wear OS and Pine Time. They promised to be more compatible with devices, but also limited customers' loyalty.

This research takes Apple Watch as the case and tests the strategic application of closed and open systems in the smartwatch industry. The research would like to answer the question: How could Apple's closed system bring competitive advantage? What risks do Apple bring by building a closed system? This research would apply PEST analysis for discussion. It would also show Apple Watch apparent strengths and weaknesses, find out the causes of its problems and give possible solutions for its sustainable development.

2. Theoretical Framework and Core Concepts

2.1. PEST Analysis Framework

PEST analysis is a strategic business tool that helps to understand the external macro-environmental factors which affect a business. Kenton [2] indicated that a PEST (political, economic, social and technological) analysis is a strategic management technique that allows an organization to evaluate some of the key external forces that could affect its activities or its ability to perform. PEST helps the organizations to identify the external forces that affect the organization that are out of the control of the organization. In this paper, PEST analysis would be applied to analyze the business environment of Apple and the external forces that affect Apple's strategy development.

3. Apple Watch Case Analysis

Apple Watch is one of the most important product lines in Apple and also one of the most successful smartwatches in the market. The success of Apple Watches is not only because of the product features that attract and meet customers, but also the external macro-environmental factors that make Apple success. It is necessary to understand the external forces to assess the strategic position of Apple Watch, because political, economic, social and technological factors would affect the development and competitiveness of Apple. Therefore, a PEST analysis would show the external forces that affect the Apple Watch and its ability to be successful in wearable products.

3.1. Political

As Apple Watch is a technology product and as a product that can wear and have some health care, most of the health content in the watch, such as electrocardiogram, blood oxygen content, abnormal heart rhythm warning, etc., must be approved by the health authorities, and then can be released in some regions. The U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA) have strict requirements for health-related technologies, which will postpone the release time and make the product unavailable in some regions [3].

In addition to healthcare policies, there are many global trade policies and tariffs that impact the political environment of the product, because the company produces a large number of goods, and relies on an international production base, especially in China. When the political relationship between the two major countries in the world is not friendly, the tariff between the two countries will have a great impact on the product. For example, the United States – China trade war has a great impact on the sales of Apple watch and Apple products. Curry [4] believes that from 2018 to 2019, Apple's revenue dropped from 51.9 billion USD to 43.6 billion USD. The most important thing is that the United States once increased the additional twenty five percent tariff on goods imported from China to the United States [4]. According to the research from Butts (2025) [5], Le Xuan Chiew said that "When the original China tariffs were at 54%, that kind of impact was serious, but manage ... but, it wouldn't make financial sense for Apple to raise prices based on the current tariffs." (Butts, 2025) Therefore, according to the above empirical facts, it is evident that tariffs have a significant impact on pricing strategies and sales volume of goods.

In addition to this, data privacy is also a very important political issue, and general data protection regulations (GDPR) in Europe and health insurance portability and account ability act (HIPAA) in the United States also have strict requirements on the way of handling sensitive users' private health data of Apple, and its strict compliance with laws will not only bring certain operational costs, but also promote consumers to believe that the Apple Watch is a reliable and private health device [6][7].

There is another important political factor in the political environment of the Apple watch, which is intellectual property and patent protection. As an important technology country, the United States has strict intellectual property (IP) and patent laws, which can help Apple watch protect its own technology and innovation, and protect its share in the smart watch market from being threatened by low-cost counterfeit products. However, at the same time, the high cost of litigation has also become a heavy burden for the company.

3.2. Economical

Apple Watch will be operating in a highly competitive global market, which affects the demand and gain of this product. Being an expensive product, its high price range places the Apple Watch in the category of luxury goods, which indicates that the product will be hard to obtain by people in low-income countries and the demand of the product will be very sensitive to wave motion of purchasing power. When the global economy is slowing down and facing inflation, the people’s disposable will be decrease, which may affect the high price electronic goods sales.

Based on the above research from Leswing, [8] the inflation and other economic macro conditions will reduce the customer’s demand for the product. As the economist explained, when the economy is in recession or purchasing power is lowering, customers are more likely to postpone the purchase of durable goods such as electronics goods. From the current situation, we can expect that a considerable number of customers will postpone buying high price electronic goods from the Apple brand. This situation shows that even though Apple depends on its brand image and has enough customer base in the market, the Apple Watch is not immune from macroeconomic conditions which will affect its short term and long run sales and market expansion.

On the other hand, the sales of Apple Watch will also be dependent on the global chain supply of electronic goods where Asia is the major manufacturing base of Apple Watch with various labor cost, raw material price and currency exchange rate changing regularly. This will also affect Apple's pricing strategy and profit margin where it also will affect the affordability of the product in different regional markets.

Even though the wearable technology market is still expanding steadily where it is driven by the customer’s increasing interest in health, fitness and convenience, Apple is still dependent on the global supply network where it is facing the economic and operational risk where the production delays, trade tension and the changing trade tariffs may also affect the sales performance of different regions and the revenue generated from it.

As the Apple Watch is an expensive product where its high price range makes it more sensitive to economic factors such as inflation, currency depreciation and the changing purchasing power of the customer. Where in the recession of an economy, the potential customer may also delay or not purchase the product in the market.

Although the Apple brand is facing the challenge in less favorable economic conditions where its customer base is still dependent on the economic factor where it may affect the sales performance. Economic Where the economic changes such as the increasing production cost in China or the changing trade tariffs will affect Apple’s pricing strategy and profit margin.

3.3. Social

The Apple watch has been successfully promoted not only as a device but also as a means of setting a lifestyle. The fashion accessory became a symbol of status, which attracted young people to it. Forty-eight percent of people who have smart watches fall into the 18-34 years old category, The Nielsen Company, which studies people around the world, reports [9]. The popularity of smart watches has increased in recent years and BYU students are wearing them [9]. The Apple Watch for many young people is not just an aid, but also a kind of fashion accessory, and even a status symbol. According to the results of the study of the Cherry [10] impact of social pressure on our behavior, we sometimes change our behavior, which is called conformity. It can be obvious, when someone asks us to do this or that, and has a more subtle impact on our behavior, leading to the fact that we begin to unconsciously conform to the rest of the team [9]. Such a conformity effect is typical for teenage collectives. Since the Apple Watch is a status symbol, it reflects social trends in the field of luxury consumption and identity, and many young buyers of smart watches for watches, most likely, choose the Apple instead of the fact that other smart watches brands for the effect of conformity. This social impression strengthens the loyalty of the brand, and the fact that the Apple watch, in fact, not only owns a high degree of technological maturity, and a reputation of a quality lifestyle. And over time, this circle of demand strengthened by the influence of conformity and status identity, becomes more resistant to the influence of competition and preferences of consumers [3, 4]. Thus, social and cultural factors play a significant role in the popularity of the Apple Watch.

In addition, the increasing aging of the population, the need for a continuous monitor of health, detection of high blood pressure and alarm features of the Apple Watch makes it relevant for a larger number of people.

However, perhaps a certain number of people of retirement age see in the Apple Watch a means of influencing the image of a young person. A large number of senior citizens want to look young, active, fashionable, reflecting the trend of “age-defying consumption” [11]. Getting a stylish high-tech device gives not only a practical, but also a psychological, physiological, and social benefit, increasing self-esteem, confidence, and social status. Therefore, the functional and technical features of the Apple Watch, reflecting the need to maintain contact, activity, and sociability, and confirming the image of a young and modern person, are attractive to older adults.

The increasing popularity of remote and hybrid work environments increases the interest of consumers in the wellness and productivity industries, where the Apple Watch provides mindfulness and calendar integration features.

3.4. Technological.

Apple Watch functions in an industry characterized by fast technological development. Breakthroughs in the field of sensor technology and artificial intelligence helped the company to expand the health-monitoring capabilities of the device from the level of registration of heart rate and sleep to more complex functions of ECG and blood oxygen content.

Future developments such as non-invasive glucose or stress level monitoring may have an even greater potential to make the Apple Watch even more distinctive in the wearables market. Indeed, Raja et al. [12] in their study reported that lately, wearables, especially smartwatches are quite effective and can be used as a new tool for screening of incidental atrial fibrillation (AF) in the general population. This feature is very popular with customers, especially for old customers, their relatives. According to the report by Köhler et al. [13], the Apple Watch is particularly popular among families with older people as an emergency service and sharing of health data. Connection with the rest of the Apple technology (iPhone, AirPods, Mac, etc.) is another factor that adds technological value to the product. This also strengthens the technological loyalty of customers to the Apple brand. According to the analysis in the article Apple’s Ecosystem: A Detailed Look at Its Advantages and Disadvantages [14], the main idea of the Apple system is in the integrated function. That is, devices can communicate and share information with each other. This integrated function attracts a large number of white-collars and student customers.

Thus, the integrated function of the Apple system benefits the owners of Apple watches, especially white-collar workers and students, who need to use the device to set a time, receive notifications, monitor heart rate, sleep, and other health indicators. The Apple Watch connects easily with iPhones, iPads, Macs, etc. This gives customers the feeling of convenience, usability, and productivity. In addition, this integrated function strengthens the technological loyalty of customers to the Apple brand. Customers who have experienced this seamless value on both sides—work and study—will be more likely to remain committed to the Apple brand and continue to use Apple products. At the same time, the fact that the iPhone is indispensable for full functionality is a shortcoming in comparison with competitors who provide more cross-platform experiences.

4. Apple Watch’s Current Shortcomings

Although the Apple Watch has already proven its superiority in the smartwatch category, it is still facing several clear disadvantages that could affect its future developments.

4.1. Price Strategy Issue

Firstly, the current retail price of the product is relatively high, which limits the penetration of the product in price-sensitive countries and markets and affects its competitiveness with other less expensive alternatives [15]. The high price of the product is due to the presence of superior features, high-quality materials, and integration with the Apple system. However, the high price of the product may affect the sales of the product in developing countries and among price-sensitive customers. This will also affect the market share of the company in the wearable technology sector. In addition, the battery life of the product is relatively short, and it needs to be charged every day, which affects the overall convenience of the product and may affect the use of the product for a long time, especially for working professionals and students.

4.2. Dependence of Apple Ecosystem

Furthermore, the Apple Watch is dependent on the iPhone. The full functions of the product are only available to customers who own Apple phones, thus limiting the availability of the product for a large part of the global market who use Android phones. This may also limit the adoption of the product in price-sensitive and technology-diversified countries and markets. In addition, the dependence on proprietary hardware may increase the switching cost for consumers, but it will also limit the penetration of the market for the product compared with more universally compatible products [13].

4.3. Over Rely on International Division of Labor

Beyond consumer-level barriers, Apple's reliance on complex international supply chains—particularly in Asia—creates vulnerabilities to fluctuating labor costs, raw material shortages, and geopolitical tensions that can disrupt production and profitability. According to (Chan et al., 2013), Apple identifies the concentration of its manufacturing base 'in single locations' and in the hands of 'a small number of outsourcing partners' as a potential risk. However, analysts observed that, 'because of its volume'—and its ruthlessness— 'Apple gets big discounts on parts, manufacturing capacity, and air freight' [16]. Macroeconomic uncertainties, including inflation and exchange-rate shifts, further intensify these risks by impacting pricing strategies and consumer purchasing power.

4.4. Short Battery Life

One of the most notable and widely discussed shortcomings is the battery life of the Apple watch. Compared to the 4-day battery life of Huawei's mass-consumer watches and the 100-hour battery life of Samsung watches, the 18-hour battery life of Apple Watch has obviously caused dissatisfaction among some consumers. Therefore, the comparison makes battery life an unignorable shortcoming of the Apple watch.

Altogether, these challenges suggest that while Apple retains strong brand loyalty and a dedicated customer base, it must address issues of affordability, convenience, and inclusivity to sustain its leadership in the wearable technology sector. Without targeted innovation and supply chain resilience, the Apple Watch's growth may stagnate despite the overall expansion of the smartwatch market.

5. Proposed Solutions

5.1. High Retail Price and Low Market Penetration

5.1.1 Customers level division

Add more cheap apple watch models with limited functions and only keep the high-end models for high-end consumers. Make the product more accessible by adopting tiered product lines.

5.1.2 Flexible pricing strategies

Adopt region-based pricing or installment payment plans to make the product more accessible in developing countries and price-sensitive markets, thereby expanding the customer base and enhancing long-term brand loyalty.

5.1.3 Expand value proposition

Expand the value proposition by emphasizing long-term health benefits and seamless integration with the Apple system to justify the high price for consumers, especially for professional and health-conscious consumers.

5.2. Dependence on Apple Ecosystem

5.2.1 More advanced batteries or energy optimization technology

More investment in next-generation batteries or energy optimization technology to extend the battery life beyond one day and make it more convenient for busy working people and students.

5.2.2 More independent capabilities

Increase more independent capabilities (such as direct mobile connectivity, more app compatibility) that do not need to be paired with an iPhone when linking up. This solution can expand the customer base.

5.2.3 More cross-platform compatibility

More cross-platform compatibility can be considered. For example, limited compatibility with Android phones can make the market base larger. In some developing countries, the Android system is more widely used. According to this, Apple can develop a low-price watch that can be used across multiple systems.

5.3. Over Rely on International Division of Labor

5.3.1 Diversify manufacturing bases

More bases outside China should be opened for production. Apple should not rely on a single manufacturing base in China. This can reduce geopolitical risks and make it easier to find production bases during trade disputes between China and the United States.

5.3.2 Strengthen supply chain resilience

Multiple suppliers should be established for component parts, long-term contracts should be signed, and sustainable purchasing should be strengthened. This will reduce the impact of raw material shortages and fluctuations in labor costs.

5.3.3 Brand equity

There is no need to worry about inflation. Apple only needs to continue to emphasize that the Apple brand still has strong quality assurance and integration with the entire Apple system. Innovation is still first-class. Consumers will feel that the price is reasonable, even in the event of a financial crisis.

5.4. Short Battery Life

More investment in next-generation batteries or energy optimization technology to extend the battery life beyond one day and make it more convenient for busy working people and students.

6. Conclusion

In conclusion, the Apple company has introduced the Apple Watch, which has become a part of the product system of the company, and the product has also occupied a leading position in the global smartwatch market. The product has differentiated itself from other products through the presence of innovative features, and the company’s brand strategy and customer base have also helped the product to maintain its market leadership. However, as the PEST analysis shows, the product is still facing several challenges from the external environment, and the internal problems of the product also exist. Therefore, the company needs to address these problems to enhance the competitiveness of the product in the future. Product competitiveness can be improved by addressing problems in political, economic, social, and technological aspects, and the product can also be improved by addressing the internal problems of the product. The Apple Watch shows how innovation, brand strategy, and response to external environments affect the long-term competitiveness of a technology product in a global market.

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