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Analysis of the Commercial Market Prospects of Wearable Products

-Exploring the Development of Wearable Products from Marketing

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***Abstract*—In recent years, wearable technology has always appeared in the form of hot words in the public. Since the launch of googleglass, humans have invented different wearable devices through research and development, and this industry has presented good development trends in various fields, including but not limited to military, medical, health, entertainment and other fields. This article mainly introduces the development history of wearable technology and takes several mainstream smart wearable devices on the market as examples to analyze the industry status of wearable products from the perspective of marketing, and analyzes the sales prospects of wearable products in the international market from an economic perspective.**

Keywords—Wearable products; Application; Prospect; Product; market

I. INTRODUCTION

The development of Internet and Internet of Things technologies is one of the basic conditions for the emergence of early wearable technology. The concept of smart wearable can be traced back to the 1960s, and its development process can be roughly divided into four stages. In the 1960s, MIT students Thorp and Shannon developed computers for gambling, which were considered the earliest ideas and prototypes of wearable computers. Prototypes of wearable technology emerged in the 1970s, but most of the wearable devices at that stage stayed in the scientists' labs, and only a small portion entered the market to popularize the wearable concept [1]. At the end of the 20th century, due to the rapid development of Internet technology and sensor technology, people's scientific concepts were improved, wearable technology was further developed, and consumer wearable devices began to appear in the market. Beginning in 2013, consumer wearable devices frequently appeared in the market and developed rapidly due to the combination of industry, user demand and technology. [2] In this industry market, companies and organizations such as Xiaomi, Baidu, and Casio are committed to accelerating their innovation and development, and promoting the upgrading of internal products. Currently, there are different forms of wearable products on the market, including smart glass and smart watches, smart bracelets, smart running shoes, etc.

II. THE ANALYSIS OF CONTEMPORARY MAINSTREAM WEARABLE PRODUCTS

The latest data shows that consumers have far more clicks and content sharing on mobile devices than computers, indicating that users prefer products which are more convenient to carry and use, and smart phones have become the core driving force for wearable products. In this context, the portable performance advantages of wearable products are becoming more and more obvious.

After a long period of silence and technology cultivation, wearable devices have appeared frequently in the market and have developed rapidly due to the combination of technology, industry and user needs. The IT giants represented by Apple and Google have deep accumulations in key technologies and core solutions for software and hardware. Therefore, they have unparalleled advantages in the manufacture and innovation of wearable devices. With the development of software technology, new applications are constantly being developed. Currently, wearable products are available in different customer segments, including smart glasses, smart watches, smart wristbands, smart running shoes, smart rings, smart armbands, smart belts, smart helmets and smart buttons. The following is a detailed analysis of mainstream smart wearable products in several markets.

A. Smart glasses

Smart glasses are the general term for glasses, such as smart phones, which have a separate operating system. They can be installed by software, games, and other software service providers. Users can add schedules, map navigation, and Friends interaction, take photos and videos, video calling with friends, etc.

Take Google Glass as an example. Google released Google Glass at the 2012 I/O Developers Conference for $1,500. Google Glass is equipped with a projection display, a camera that can capture video, and a touchpad on the frame. It also comes with a microphone and speakers, various sensors, gyroscopes, and a variety of communication modes. Google Glass has the functions of voice control, navigation, camera and video chat. There is a parallel 720p camera on the outside of the right eye. There is a miniature display on the upper side.

The touchpad, microphone, gyroscope sensor and other devices are located in the temple. The built-in battery can support six hours [3]. New York Times columnist Nick Bilton said: "When this technology matures, we can be liberated. Wearable computers will free us from the life of the screen. "

B. Smart watches

A smart watch is a watch that has information processing capabilities and meets the basic technical requirements of the watch. In addition to the time indicated, the smart watch should have one or more functions such as reminder, navigation, calibration, monitoring, interaction, etc.; the display mode includes pointers, numbers, images, and the like.

Taking the Samsung brand as an example, Samsung released the GalaxyGear2 smart watch at the MWC show in 2014. From the android system of the first generation to the Tizen system, it is equipped with a faster 1GHz dual-core processor. Like the first generation, it supports hands-free calling. The GalaxyGear2 can be connected to the phone via Bluetooth, and can shoot 720p/30fps videos and view various notifications directly on the watch. In addition, the heart rate sensor is installed on the back of the watch, but heart rate monitoring is performed in real time. The built-in pedometer can also record data consumption and detect health more accurately [4].

C. Smart bracelet

The smart bracelet is a wearable smart device. Through this bracelet, users can record real-time data such as exercise, sleep, and some diet in daily life, and synchronize these data with mobile phones, tablets, and iPod touches to guide healthy living through data. As a technology product that is currently being noticed by users, the smart bracelet has a powerful function that is quietly infiltrating and changing people's lives. Its built-in battery can last for 10 days, the vibration motor is very practical, and the simple design style can also play the decorative role of the jewelry.

Take the FitbitFlex from Fitbit, California, USA as an example. The user chooses FitbitFlex as a health tracker, for example, to record sleep duration and sleep quality as the user goes to sleep. FitbitFlex can also act as a pedometer to record walking distances and burning calories. FitbitFlex displays the percentage of the user's goal by five lights on the front, two strokes to give the goal to complete the goal, and multiple taps to enter sleep mode.

III. THE NECESSARY CHARACTERISTICS OF WEARABLE DEVICES

In order to highlight "wearable", the characteristics of wearable devices must be different from those of mobile phones and computers. Otherwise, from the user's point of view, the competitiveness of wearable devices in front of mobile phones and computers will be greatly reduced. If you take photos, send emails, etc., users will be more inclined to choose a mobile phone. In order to have its own industry structure in the market, broaden the scope of users, and enhance the user experience, wearable devices on the market must improve their own characteristics from product development to better meet user needs.

A. Practicality

The wearable device must first be able to fit the user's body. The concept of wearing should not only stay on the outside, but should be truly integrated into the user's life. Just like glasses, there is a low sense of everyday life, but you can't leave it. At the same time, wearable technology should also reduce the difficulty of using the product, try to simplify the device and speed up the user's access. Because of the popularity of wearable technology, his user base is not only young people with strong learning ability and chasing trends, but also vulnerable groups such as children and the elderly. For these two groups, easy-to-learn devices can truly penetrate the wearable device in daily life.

B. Comfort

In order to differentiate from mobile phones and computers and gain their own market position, wearable technology needs to emphasize the comfort of wearing. The weight, color and size of the equipment must take into account the needs of different groups of people. At this point, in the second generation of Google Glass, the user's myopia have been adapted to solve the problem of a generation of people who are uncomfortable in myopia.

IV. THE PROSPECTS OF WEARABLE TECHNOLOGY

According to Gartner's data, in 2016, global wearable device shipments reached 265.88 million units (including Bluetooth headsets). In 2017, global wearable device shipments increased by 16.7%, total sales reached 310.37 million units, and total global revenue was $30.5 billion, of which $9.3 billion came from smart watch products represented by Apple AppleWatch and Samsung Gear [5].

It is estimated that by 2021, 505 million wearable devices will be sold worldwide, of which smart watches will be sold close to 81 million, accounting for 16% of total wearable device sales, global wearable device sales will create 55 billion US dollars in 2021, with smart watch revenues of $17.4 billion, is one of the most promising categories of all wearable devices [6].

In the past two years, the rapid development of smart wearable devices has benefited from a number of factors. From a technical point of view, many wearable technologies have gradually matured. Components, operating systems, development platforms, etc. have been developed rapidly. From a market perspective, Internet giants crossed the border into the wearable arena and became the main promoters of the market. Among them, Google Glass, released in 2012, set off a wearable craze for the first time. Baidu, Apple and other giants subsequently entered, and the measures were frequent. Users' awareness of wearables has increased dramatically, and sports and health wearable devices have received the most attention. According to the data, in 2017, China's smart wearable market reached 35.26 billion yuan, with a growth rate of 35.7%. With the development of the wearable industry technology gradually mature and popularize the primary industry, it is expected that

the prospect of China's smart wearable device market will further expand in 2018, with a market size of 44.60 billion yuan and a growth rate of 26.5% [7].

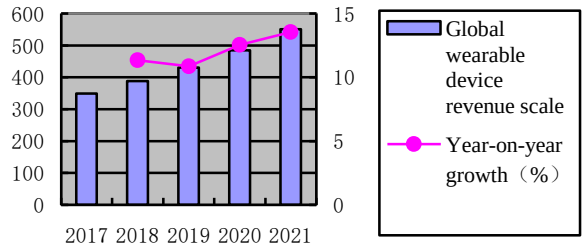

Fig. 1 Global Wearables Revenue Forecast from 2017 to 2021(Unit: US$100 Million)

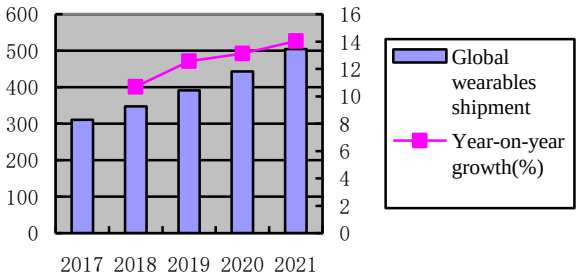

Fig. 2 Global wearables Shipment Forecast from 2017 to 2021(Unit: Millions)

In the next few years, more wearable products will be continuously developed and popularized in the market. At the same time, we must pay attention to some of the existing problems of wearable technology, such as backward battery technology, high cost, and conflict with users' demand for fashion. On this basis, wearable technology has the following trends.

A. Application of wearable computing technology in blue-collar workers

Wearable computing technology will be widely used by blue-collar workers, such as maintenance personnel, construction workers, etc., to liberate their hands and collect and transmit information. It emphasizes that users can get information space naturally and effectively when they are working or living in daily life.

B. Establishment of a wearable body network

The wearable body network is an important research direction of wearable technology, which can improve the perception of people, obtain more personal parameters, perform human-computer interaction, and build a supportable wearable computing network from the bottom. These micro-nodes that sense the body and behavior of the human body, form an information network within and outside the body domain, and need communication standards to connect.

C. The advent of wearable computers

With the development of computer miniaturization technology, wearable computers can integrate computers, sensors, actuators and display devices. Its emergence has improved product quality, simplified the wearable computing system, and reduced the cost of the product, which is a future development trend.

D. Human-computer interaction

An important topic of wearable products is that human-computer interaction must be convenient and efficient, and the human-centered ideology of wearable computing provides the basis for natural human-computer communication and can generate new intelligent products.

Human-computer interaction technology is the key technology in wearable technology. The wearable device not only miniaturizes the computer and enables it to be worn on the body, it also needs to achieve close cooperation between human and computer so that the human brain can be expanded. With extension [8]. In the field of wearables, we need to pay attention to the following developments of human-computer interaction technology:

(1) Text interaction: research on text-related technologies such as keyboard layout input, including keyboard, mouse, tablet, etc.

(2) Graphic interaction: research graphics and icon design interaction and other graphic interaction related technologies.

(3) Voice interaction: research on speech interaction and related technologies such as speech recognition and speech synthesis.

(4) Somatosensory interaction: research somatosensory input, output and other somatosensory cross-correlation techniques.

(5) Information accessibility: research on the differences in body function, including the special needs of people with disabilities, and the elderly.

(6) IntelliSense interaction: research the traditional human-computer interaction (mouse, keyboard, joystick) technical characteristics, research touch technology and application development; research new human-computer interaction technology, including techniques and applications such as voice, touch + voice, head movement perception, mouth motion perception, expression recognition, gesture recognition, body motion perception, gravity sensing, position sensing, and position localization.

E. Wearable computing and fashion

Wearable computing products will be popular in the fashion world. After satisfying the basic needs of users, technicians should further consider the aesthetics of the equipment.

V. CONCLUSION

"Wearable products" can be a mainstream form in the next few years and will be popularized in various industries, which will bring huge industrial value. Its future is beautiful, the platform is very wide, and the market is very good, but the task is also extremely difficult. In order to occupy a place in the international market of competitive incentives, we also need to carefully consider the technology, price and core competitive advantages of these products.

By the time the wearable products really infiltrated our lives, we can imagine that at 6:00 in the morning, Lark Pro shocked us a little, and stumbled into the kitchen. The Vuzix M100 smart glasses we wear can help us analyze the nutritional value and calories in each food. Google glasses show the documents we want to see when we go to work, and after work, Misfit Shine shows us the amount of exercise today, this is a pleasant day!

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