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Research on AirTrack Pro business model and future development plan

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Abstract. In the era of the digital economy, wearable devices will become a trend in people's lives. This paper first expounds on the literature review of wearable devices, then discusses the business model and market analysis of AirTrack Pro, then uses the SWOT model to analyze AirTrack Pro, and finally analyzes the future development plan of AirTrack Pror.

Keywords: business model; future development; AirTrack Pro.

1. Introduction

Wearable devices are portable devices worn directly on the body or integrated into the user's clothes or accessories. To strengthen the application of the wearable device industry, China has successively issued many policies, such as the "Action Plan for Implementing the National Standardization Development Outline (2024-2025)" issued by the State Administration for Market Regulation, the Central Cyberspace Affairs Commission and other departments in 2024, which proposes to improve the standard system of consumer electronic products and promote the interconnection and interoperability of multi-variety and multi-brand innovative electronic products, mobile communication terminal products, wearable devices and other products. In response to the national call, provinces and cities actively promote the development of the wearable device industry. In February 2023, Guangdong Province promoted the "Several Policy Measures to Stimulate Enterprise Vitality and Promote High-quality Development," encouraging cities to organize home appliance and other production and sales enterprises to launch activities to benefit the people and promote consumption, support home appliance manufacturers to carry out recycling target responsibility system actions, guide financial institutions to improve financial service capabilities and increase the promotion of green smart home appliances, smartphones, wearable devices, etc. Rewards will be given to cities with better comprehensive consumption conditions. In June 2023, Tianjin issued the "Action Plan for Accelerating the Construction of an International Consumption Center City (2023-2027)", supporting the research, development, and application of new products such as smart homes and wearable devices.

In this context, wearable devices have become one of the hot issues that academia and industry are concerned about. This paper first describes the literature review on wearable devices, then discusses the business model and market analysis of AirTrack Pro, uses the SWOT model to analyze AirTrack Pro, and finally analyzes its future development plan.

2. Literature Review

Wearable devices mainly collect users' physiological and environmental information through sensors and perform data analysis and processing to provide real-time feedback to users. It can be seen that sensors play a vital role in wearable devices. This section mainly focuses on the latest research on various types of wearable devices at home and abroad. It revolves around three typical wearable devices with electronic skin, data gloves, and surface electromyography as the sensing core.

2.1 Electronic skin wearable devices

As the largest organ in the human body, the skin usually has rich functional properties, such as stretchability, self-healing, strong mechanical toughness, and tactile perception. Devices that mimic these excellent properties of human skin are called electronic skin wearable devices. As a new

generation of flexible electronic devices, electronic skin has the characteristics of softness, lightness, and diverse morphology and functions. It has broad application prospects in the fields of physiological health, virtual reality, robot perception, real-time interaction, etc., and is the development trend of wearable devices in the future. In the field of gesture interaction, there have been many related studies involving electronic skin.

Tang et al. designed a highly stretchable (800%), conformal, and sticky electronic tattoo. This electronic tattoo can amplify the crease effect and the signal of the internal integrated strain sensor three times. It can also be easily migrated to different skin surfaces. Through this electronic tattoo, hand movements can be detected, and the robot hand can be remotely controlled.

Liu et al. designed a wearable electronic skin wearable device. This device integrates communication functions such as Bluetooth and wireless WiFi and has perception and vibration output functions. Through this integrated skin electronic device, visual and tactile virtual reality (VR) can be integrated into robot VR's closed-loop human-computer interaction system. This has excellent application prospects in practical scenarios such as the non-contact sampling of biological samples and the care of infectious patients.

To improve the safety of robot operation, Li et al. designed a quadruple skin sensor (as shown in Figure 1.4). They integrated the sensor with the robot to realize the object's grasping and recognition function. The designed multiple sensors also have a multi-layer microstructure, which can work as a thermal receptor and realize the perception of material thermal conductivity and contact pressure and the perception of the surrounding environment temperature.

In summary, many electronic skin-sensing devices are based on various physical and chemical materials and microelectronic components. Most of these thin, flexible, and flexible electronic skin devices have been used in practical scenarios such as gesture detection and tactile perception. However, wearable devices based on electronic skin are still in the initial stage of development. Due to the lack of software and hardware system support, most electronic skins have not yet formed a fully functional and highly integrated wearable system. Therefore, it is of great research value to develop a more functional wearable system for electronic skin.

2.2 Data Glove Wearable Device

Data gloves are another typical wearable interactive device. They usually have multiple sensors and control units, allowing users to interact through hand movements. This allows for practical applications such as game control, virtual reality, and remote operation. Therefore, data gloves are also widely used in various gesture interaction scenarios.

Zhu et al. designed a tactile feedback smart glove composed of palm sliding sensors, finger bending se

ary, data gloves can capture subtle movements of the hands and achieve higher precision and accuracnsors, and piezoelectric mechanical stimulators, which realized the detection of multi-directional bending and sliding events in virtual space. Sundaram et al. designed a tactile knitted glove assembled by 548 resistive sensors to learn the feature extraction of human grasping actions, showing the application potential of gloves to achieve high-precision object manipulation. Wen et al. studied in detail a carbon nanotubes/thermoplastic elastomer (CNTs/TPE) coating method to achieve superhydrophobicity of triboelectric fabrics and designed a data glove based on superhydrophobic fabrics that can be used for gesture recognition.

In summy in gesture interaction. At the same time, data gloves can also be customized according to different actual scenarios by increasing or reducing the number of sensor units and changing the position of sensors to adapt to various needs. However, most current data glove devices also have problems such as high price, high design cost, and poor wearing comfort that must be solved. Therefore, considering combining the advantages of electronic skin with traditional data gloves is a way to solve the problem. On the one hand, electronic skin has the advantages of low cost and rich signals; conversely, combining the two can naturally realize gesture interaction and improve user experience.

2.3 Surface electromyography wearable device

Surface electromyography (sEMG) is a bioelectric signal generated by the surface muscles of the human body when they contract, which can reflect important information about the muscle activity of the human body. Therefore, wearable devices based on sEMG to monitor muscle activity can be used to develop gesture interaction applications. Such devices usually use machine learning models to complete the task of gesture classification. Depending on the number and distribution of electrodes for collecting sEMG, sEMG wearable devices are generally divided into sparse multi-channel and high-density electromyography devices. This section will mainly introduce the latest research progress on sEMG devices in recent years.

Tam et al. designed a wearable myoelectric sensing system for real-time fine gesture recognition. The system consists of a customized, non-invasive, compact, and easy-to-mount 32-channel high-density surface electromyography (HD-SEMG) electrode array built on a flexible printed circuit board that wraps around the forearm. It provides a low-noise digitization interface and wireless data transmission capabilities.

In summary, sEMG wearable devices are mainly used in medical rehabilitation, gesture recognition, and other fields and are currently being developed in the direction of miniaturization, low power consumption, high density, etc. In addition, since sEMG wearable devices need to be close to the skin surface for signal acquisition, improving the wearing comfort of the device while ensuring the quality of signal acquisition is also an important research direction in the future.

3. AirTrack Pro’s business model and market analysis

3.1 AirTrack Pro ’s business model

AirTrack Pro's business model focuses on value innovation, combining advanced fitness technology with sustainability. AirTrack Pro pioneered solar-powered smart sportswear that is both self-sustaining and environmentally friendly. Revenue comes from lifecycle pricing, analytics and coaching subscriptions, and partnerships with brands and events. Sustainability is key, with scale achieved through ecologically friendly production while reducing carbon footprint. This approach creates a unique, responsible, and profitable market space. AirTrack Pro's product line features solar-powered smart sportswear that is both functional and innovative. These include tops, leggings, and gear with real-time health monitoring features to track athletic performance and health. In addition to this, AirTrack Pro also offers accessories such as solar-powered running shoes and eco-fitness gear designed to enhance the sports experience while maintaining sustainability. These products perfectly align with the company's mission to integrate technology, performance, and sustainability into everyday fitness. In addition, AirTrack Pro stands out for its solar-powered design, which does not require charging, and monitors heart rate, hydration, and stress in real time. It is made of environmentally friendly, recyclable materials and offers customizable features to meet individual needs. By combining cutting-edge technology with sustainability, AirTrack Pro fills a critical gap in the market, allowing businesses to stand out from their competitors.

In the process of AirTrack Pro providing solar energy, thin-film solar cells are mainly used. Thin-film solar cells have the advantages of being ultra-thin, soft, and occupying a small area. In addition to meeting the wearing comfort, the unique drying process in the daily maintenance of clothing products can provide sufficient charging time for solar cells. In addition, the cost of waterproof and washable treatment of thin-film solar cells is low due to their small size. At present, some thin-film solar cells have been put into market application. Still, they are not mature enough, and there are problems in environmental protection and process production, which need further development and optimization. The adhesive process is used to attach to clothing, and TPU film is added. The attachment position is close to the functional device or directly connected to the intelligent module's surface to reduce the transmission wire's length. In the color design of clothing, the color of the thin-

film photovoltaic panel is considered, and the photovoltaic panel is designed with a simple pattern so that its appearance is integrated with clothing design as decoration.

3.2 Subjective evaluation of AirTrack Pro

After this project's AirTrack Pro application design is produced and tested, its scientific and artistic qualities need to be evaluated. In addition to meeting the basic attributes of ordinary clothing, it should also consider aesthetics, fashion, economy, comfort, safety, and technological attributes.

(1) Aesthetics and fashion mainly include color, style, pattern, and theme. AirTrack Pro fully analyzes the psychological and physiological characteristics of the customer group when designing. It requires designers to start from the safety of clothing and combine the overall appearance design to make it simple and generous, with reasonable style and eye-catching color matching. Considering the artistic effect and safety factors of clothing, bright yellow and magenta are used.

(2) Economic efficiency mainly includes production and finishing costs. Cost control is the central link of AirTrack Pro design. The ultimate goal of the design is to ensure that the clothing meets basic functional requirements and is accepted by the market. After market research, the market penetration of the flexible solar panels used in this paper is relatively high, the price is relatively low, and the market can accept the overall cost.

(3) Comfortability As a core technology element, flexible solar panels are combined with clothing to consider the comfort of clothing. They do not affect the comfort of human activities. They use fabrics and linings with a specific thickness and a moderate size. They also use ultra-thin flexible solar panels with the largest bendability, smallest volume, and lightest weight as energy supply elements. In terms of circuit connection method and quantity configuration, after many tests, it was found that 12 flexible solar panels connected in 3 series and four parallels can simultaneously meet the requirements of achieving the fastest charging effect for electronic devices based on aesthetics and comfort.

(4) Safety mainly includes fabric, style, and process safety. In the design of AirTrack Pro, safety is the first indicator of charging safety and stability. The selection of fabrics and accessories, as well as the sewing of electronic components on clothing, are the second indicators; that is, the mechanical safety performance of sewing manufacturing and other mechanical safety performances meet the requirements of GB/T22705-2008 and GB/T22704-2008 safety standards.

(5) Technology AirTrack Pro subverts the traditional clothing design and integrates the latest technological elements. The latest high-quality DINTEX technology fabrics are used for fabrics. The nanotechnology microporous breathability principle can make clothing more windproof, breathable, and warm and has dual waterproof effects. It also uses the most advanced ultra-thin flexible solar panel technology, which has the highest degree of fit with clothing fabrics, adding functionality to clothing design and developing another new field in wearable devices.

3.3 AirTrack Pro Market Analysis

Figure 1 Smart Clothing Market Size 2023 to 2033 (USD Billion)
Source: www.visionresearchreports.com

As you can see from this bar chart, the smart clothing market is expected to soar from $3.97 billion in 2023 to $44.79 billion in 2033, driven by the demand for wearable technology and sustainability. With an annual growth rate of over 30%, this is an excellent opportunity for AirTrack Pro to lead the way and tap into the eco-friendly, tech-savvy market with its innovative solar-powered smart sportswear.

Figure 2 By End-use Industry

This segment shows that innovative sportswear leads the market, which perfectly fits AirTrack Pro's fitness focus. Real-time tracking is in high demand, and North America is leading in adoption, which enables AirTrack Pro to capture trends in the sports and fitness industry with its sustainable, high-tech products.

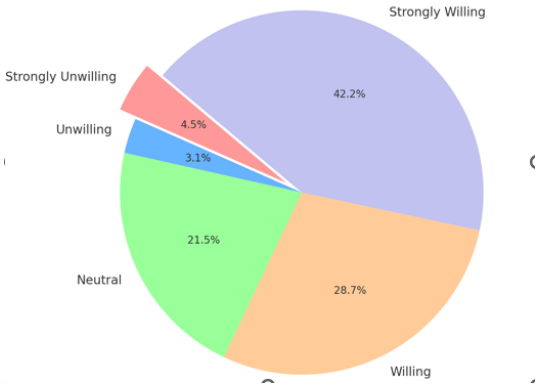

Figure 3 Willingness to Try Smart Fitness Devices/Clothing

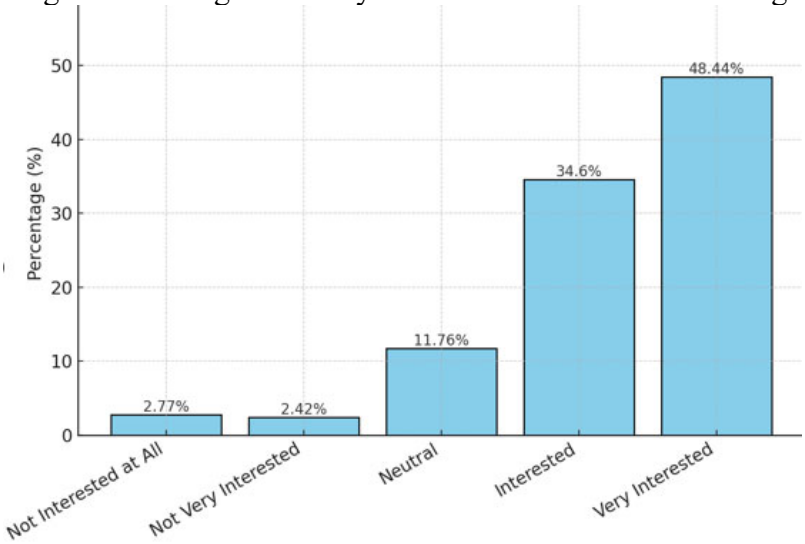

Figure 4 Interest in Solar-Powered Smart Sportswear

The company’s survey of 289 participants showed strong interest in innovative fitness equipment, with over 70% willing to try it and only 7.6% not. Interest in solar-powered innovative sportswear

was even higher, with 83% interested and nearly half "very interested." This highlights a clear need for sustainable, innovative fitness solutions.

3.4 Marketing

(1) Product pricing strategy

The pricing strategy of enterprise products is adjusted according to the product life cycle: in the introduction stage, the price starts from $200 to $300 to position the high-end product; in the growth stage, the price is adjusted to $180 to $250 to attract more customers; in the maturity stage, the price is reduced to $150 to $200 to remain competitive; and finally in the decline stage, the price is reduced to $120 to $150 to clear inventory. Throughout the process, the subscription service of enterprise products charges $10 to $15 per month, providing continuous value through guidance and analysis.

(2) Sales channels

Companies are adopting multi-channel strategies to reach more customers. Directly, companies will sell globally through websites and apps and open pop-up stores in fitness centers for customers to experience first-hand. Indirectly, companies will cooperate with gyms, sports brands, and ecological markets to expand the coverage of products. This ensures that products can connect with customers no matter where they are.

Businesses also use the RACE framework to grow and engage customers. We attract customers through social media and search ads, take action using interactive tools like virtual try-ons, convert through early discounts and bundles, and engage customers by providing personalized recommendations and rewards for user-generated content.

(3) Promotion Plan

The company's product promotion plan uses a milestone-based promotion map. The map starts with a vision, demonstrating sustainability through bold activities. Next is curiosity, which stimulates interest through mysterious activities and influencers. Next is education, showing features through exhibitions and videos. The company opens pre-orders at the launch with additional benefits such as AR pop-ups. Engagement builds loyalty with customers through gamification and drives sales growth through collaboration and the development of new markets.

3.5 Financial development trends

The business uses zero-based budgeting to focus on growth and efficiency. 35% of the budget is allocated to product development for high-quality innovation, 25% to marketing to increase brand awareness, 20% to distribution to ensure smooth delivery, 15% to subscription services and customer support to ensure retention, and 5% to sustainability initiatives to strengthen the business's environmental commitment. This balanced approach is consistent with our strategic goals.

4. Analyze AirTrack Pro using the SWOT model

Figure 5 AirTrack Pro TOWS matrix

Regarding competitive position, the TOWS matrix for AirTrack Pro highlights our competitive advantages: solar-powered, eco-friendly design attracts environmentally conscious customers, while partnerships and local production reduce risk. We address challenges through payment plans, education, and affordability, and we address threats through certifications, firm support, and durable products, keeping us at the forefront of sustainable fitness.

4.1 Advantages of AirTrack Pro

(1) Targeting environmentally conscious consumers with solar-powered wearable devices.
(2) Cooperate with sustainable development brands to co-organize events.
(3) Leading the wearable technology with health monitoring.

4.2 AirTrack Pro Disadvantages

(1) Introducing payment plans to address the problem of high initial costs.
(2) Educate users on the benefits of health tracking.
(3) Due to the high price, develop an affordable, lightweight product version.

4.3 AirTrack Pro Opportunities

(1) Obtain sustainable development and health certification.
(2) Enhanced warranty and after-sales support.
(3) Improve R&D durability and platform compatibility.

4.4 AirTrack Pro Challenges

(1) Promote environmentally friendly design and surpass competitors.
(2) Localize production to reduce supply risks.
(3) Collaborate with influencers to showcase your unique USP.

5. Future development plan of AirTrack Pro

Product competitiveness is closely related to the degree of product innovation. At present, the homogeneity of wearable products on the market is serious. Developing more innovative new categories is one of the main directions for expanding the wearable market. This article provides a certain degree of reference for developing equipment-based clothing from the perspective of category differentiation and enhanced practicality. On the one hand, the wearable products on the market do not fully meet the market demand, and there is a lot of room for innovation and optimization; on the other hand, the research on wearable technology and flexible sensor technology has been continuously deepened, and the wearable industry chain has been continuously improved. Both market demand and technical conditions provide feasibility for developing new categories of equipment-based sportswear. Technology needs to be installed on products to be promoted. Equipment is essential for wearable technology to move from concept to commercialization.

Looking ahead, the company's revenue forecasts are closely tied to the rapid growth of the AI-enabled fitness industry, which is revolutionizing the way people approach activewear and training. In the first year, the introduction phase, the company's revenue is expected to be $2 million, with a 30% return on investment. This will be driven by early adopters and fitness enthusiasts eager to adopt AI-integrated activewear for real-time health monitoring and performance insights. In the growth phase (years 2-3), the company's revenue is expected to increase to $6.24 million, with a return on investment rising to 45%. This growth will be driven by the expanding market for AI fitness solutions, including partnerships with gyms, eco-marketplaces, and sports brands, expanding the company's reach and adoption. By the maturity phase (years 4-5), the company's revenue is expected to reach $17 million, with a 50% return on investment. This reflects the mainstream adoption of AI-enabled fitness activewear, as consumers increasingly demand innovative, data-driven health and

performance solutions combined with eco-friendly designs. These forecasts highlight the potential for AirTrack Pro to capitalize on industry trends and achieve continued, scalable growth.

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