

Strategic Analysis and Countermeasures of Ecovacs Robotics

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Abstract. With the rapid development of intelligent robots, the market for home cleaning robots, including floor sweeping robots, continues to expand. The floor sweeping robot industry offers a variety of robot products, and as people's living standards improve, the demand for robot products on the market increases, leading to the gradual adoption of floor sweeping robot products by users. However, with the increasing competition in the floor sweeping robot industry and the rapid pace of product updates, Ecovacs Robotics, although a leading company in the industry, still faces a fiercely competitive market environment. This paper focuses on the development of Ecovacs Robotics in the floor sweeping robot industry, analyzing its strategic development based on internal and external resources and capabilities, the Boston Matrix, macro environment, industry environment, global strategy, and competitive strategy. In addition, this study proposes countermeasures for the development of Ecovacs Robotics in response to the current market environment, aiming to facilitate its stable development and advantageous position in the highly competitive floor sweeping robot industry.

Keywords: Ecovacs Robotics; Strategic Analysis; Development Countermeasures.

1. Introduction

In terms of the market size of the robotic vacuum cleaner industry, according to statistics, the market size of the robot vacuum cleaner industry in China reached 12.4 billion yuan in 2022, an increase of 3.4% year-on-year. In terms of market sales, in 2022, due to multiple factors such as the ongoing pandemic and macroeconomic downturn, the demand for the robotics industry was suppressed, and the retail volume of robot vacuum cleaners in China was 4.414 million units, down 23.77% year-on-year. As a leading company in the robotic vacuum cleaner industry, Ecovacs has more than 20 years of corporate development and market expansion. The core competitiveness of its products has gradually strengthened, and it has two major series of products: service robots and cleaning appliances. In terms of service robots, Ecovacs has products such as Deebot series of robot vacuum cleaners, Winbot series of window cleaning robots, Airmega series of air purifying robots, and Wango series of commercial service robots. The cleaning appliances module includes the research and development, production and sales of the company's own brand "TEK" series of products. Through continuous technological updates and market demand, Ecovacs still has significant advantages in the competitive robotic vacuum cleaner industry. However, as the robotic vacuum cleaner industry continues to evolve, Ecovacs' operating environment is also affected to some extent. Therefore, in order to analyze Ecovacs strategically and adjust the relevant strategic management system, it is necessary to provide momentum for the development of Ecovacs.

2. Ecovacs Internal and External Environment Analysis

2.1. Internal Environment

2.1.1. Resource and Capability Analysis

Strong Production Management Capability With years of experience in the robotics industry, Ecovacs has rich experience in intelligent manufacturing and strong capabilities in quality and production capacity control, laying a good foundation for high-quality and cost-effective products. Ecovacs mainly self-produces its robotic products, which can mitigate the impact of external environmental



factors such as seasonal fluctuations in e-commerce sales and changes in domestic and international tariff policies, and has a strong adaptability.

Relatively complete sales channels Ecovacs has relatively complete sales channels, with outstanding sales performance in the category of robot floor cleaning products, especially leading in online sales in China. Ecovacs has built a complete three-dimensional marketing channel that combines online and offline sales in China, covering major e-commerce platforms and sales and service networks in major cities across the country. At the same time, Ecovacs has also established sales channels in international markets, adopting a strategy of entering mature markets in developed countries first, and then formulating strategies for entering developing countries based on market demand, in order to improve its sales channels.

Through years of R&D investment and technological accumulation in the robotics industry, Ecovacs has innovated in several types of service robots that specialize in household floor cleaning and environmental health, as well as lawn mowing robots for lawn care scenarios. At the same time, Ecovacs is committed to technological breakthroughs in core components, continuously innovating positioning, navigation and obstacle avoidance capabilities, and launching two new solutions for commercial cleaning and lawn care scenarios, continuously building a diversified product matrix for robots and accumulating strength for the company's long-term development.

2.1.2. BCG Matrix Analysis

According to the 2022 annual report, Ecovacs' sales revenue from its service robot brand reached 7.798 billion yuan, accounting for 50.88% of Ecovacs' total sales revenue, an increase of 16.21% year-on-year. Although sales volume declined in the first half of the year, retail sales reached 5.73 billion yuan, an increase of 9% year-on-year due to price increases. In the domestic market, Ecovacs and Roborock, the two leading robot manufacturers, account for more than 60% of the market share. Ecovacs had a 39.8% market share in online sales in 2022, while Roborock had a 22.9% market share. The combined market share of the two companies reached 62.7%. As Ecovacs and Roborock are the largest competitors in the domestic robotics industry, Ecovacs' relative market share is around 1.74. With its high market growth rate, Ecovacs is in a position of high growth and strong competition, belonging to the "star" business in the first quadrant of the BCG Matrix.

2.2. External Environment

2.2.1. Macro Environment Analysis

National tax incentives (P). The government strongly supports research and innovation in the AI and robotics industry and has increased the deduction for R&D spending to 100%. Intangible assets can be amortized at 175% of the cost before tax, encouraging high-tech enterprises to independently develop core technologies and become internationally competitive and influential international corporate brands.

Large market potential (E). By 2023, the robot vacuum cleaner industry in China will shift from "product iteration+ price increase" to "increasing penetration rate+ expanding and strengthening leading companies". The domestic market for robotic vacuum cleaners is in the stage of "exchange quantity for price" due to the complete functionality of the product and the brand effect. Meanwhile, China's consumer electronics market has been steadily growing, not only in the smart home sector but also in areas such as smart wearables and smart health. Among them, China's smart furniture industry has a large market size, and with technological advances and industry innovation, there is still room for growth.

Changes in consumer groups (S). With the development of the Internet, people's familiarity with the Internet and electronic products is increasing. The appeal of intelligent robotic vacuum cleaners to the younger generation is growing. According to a report by the Open Source Securities Research Institute on the robotic vacuum cleaner industry in 2023, the 21-30 age group accounts for 42.33% of the main consumers of robotic vacuum cleaners. At the same time, China is experiencing an aging

population and an increasing demand for household services, which will promote sales of Ecovacs' household cleaning appliances and further drive the development of the "lazy economy."

Overall technological upgrades in industry (T). The robot vacuum cleaner industry has undergone two revolutionary innovations, continuously promoting technological innovation and improving product capabilities, driving the industry into a new development cycle. In terms of essential functions, sweeping and mopping technologies have been continuously optimized, while optional functions such as disinfection and sterilization are expected to become essential features.

2.2.2. Industry Environment Analysis

(1) Product life cycle.

Over the past two years, the sales volume of the robot vacuum cleaner industry has decreased while sales revenue has increased, mainly driven by price increases. In terms of sales volume, sales of robotic vacuum cleaners have shown a continuous downward trend for two consecutive years, with a year-on-year decrease of 24% in 2022. In terms of retail sales, revenue reached 12.4 billion yuan in 2022, an increase of 3.4% year-on-year. The difference in sales volume and revenue growth was due to a significant increase in the average market price. In 2021, the industry average price increased by 44%, and in 2022, the industry average price increased by 35% to 2,812 yuan. According to industry data, the robot vacuum cleaner industry is currently in a stage of rapid market demand expansion, increasingly mature product technology, and high industry profit margins.

In August 2022, Ecovacs' volume trading strategy was successful, and in November, its online sales market share rebounded to 42.6%. By implementing the volume trading strategy and adopting a large single product model, Ecovacs guided consumers to choose its new flagship models, resulting in continuous growth in sales revenue. Ecovacs' robotic vacuum cleaners are also in a growth phase. At the same time, Ecovacs has shifted its focus to research and development, global planning technology, and sensor integration to achieve higher mapping accuracy and efficiency, as well as longer detection distances and strong anti-interference capabilities. By 2022, Ecovacs has made significant progress in commercial cleaning robots and outdoor lawn mowing robots, driving commercialization.

(2) Five Forces Model of Competition



Fig 1. Ecovacs' Five Forces Model of Competition

Existing competitors. Competition in the robotic vacuum cleaner industry is becoming increasingly intense, with little differentiation between products. Industrial concentration is on the rise. The large number of patent applications by domestic companies has put pressure on Ecovacs' patent technology upgrades. The significant increase in the number of service robot companies has led to the emergence of many competitors, and Ecovacs will face a fiercely competitive market environment.

Supplier bargaining power. The deepening localization of the upstream supply chain in the robot vacuum cleaner industry and the gradual formation of economies of scale on the production side of

suppliers are expected to lead to lower prices for components. This may ease the cost pressures on robotic vacuum cleaner companies.

Buyer bargaining power. Ecovacs has established a relatively mature supply chain system and is expected to gain stronger upstream bargaining power based on its industry-leading position. However, in the highly competitive robotic vacuum cleaner industry, buyers have multiple options and thus greater bargaining power.

Threat of New Entrants. In a favorable macro environment, with strong support from government policies, there has been an increasing number of industrial parks focused on the development of robots nationwide. Many companies are preparing for development in the service robot industry.

Threat of Substitutes. Currently, the prices of substitutes for service robots are becoming lower, and their quality is improving. This leads to lower switching costs for users and increases the competitive pressure on Ecovacs' profitability.

3. Analysis of Ecovacs Development Strategy

3.1. Overall Strategy

3.1.1. Diversification Strategy

After more than 20 years of development, Ecovacs has launched a complete robot service solution for the global market, including "AI+ service robots" for the public sector and a combination of household robot vacuum cleaners DEEBOT, air purifier robot AIRBOT, and window cleaning robot WINBOT.

3.1.2. Intensive Strategy - Product Development Strategy

Ecovacs has always focused on customer needs and has continuously expanded its business boundaries in the service robot industry, striving to break through multi-functional product combinations, multi-dimensional environmental perception systems, and multi-robot efficient collaboration systems. While creating intelligent commercial cleaning experiences for customers, Ecovacs aims to reduce usage costs.

3.1.3. Integrated Strategy - Forward Integration

Ecovacs implements a strategy that emphasizes retail and structural adjustments, focusing on developing mid- to high-end sales channels in first-tier markets. At the same time, it is actively exploring new offline retail business models by establishing high-quality flagship stores and mid-to-high-end community showrooms to meet consumers' demand for experiential shopping, and continuously enhance marketing capabilities. Through its integrated strategy, Ecovacs aims to become a leading service robot manufacturer in China, with comprehensive economic strength, and establish itself as a globally recognized brand.

3.2. Competitive Strategy

3.2.1. Differentiation Strategy

Ecovacs aims to increase its research and development investment, deepen its dual-wheel drive strategy, and make comprehensive efforts in the high-end market to establish a presence in the "differentiated" high-end market and gradually increase market share. Ecovacs took the opportunity of last year's autumn strategic launch event to introduce the first intelligent lawn mowing robot, GOAT G1, to the market. With "robot vision" as the entry point, Ecovacs strives to provide consumers with convenient, efficient, aesthetically pleasing and safe intelligent lawn mowing experiences, and promote the entry of intelligent lawn mowing robots into a new era. However, the robotics industry faces challenges such as low customer satisfaction and insufficient product intelligence, which is where Ecovacs' technological leadership lies. As a rapidly evolving product in the field of smart home

robotics, Ecovacs implements a differentiation strategy, closely monitors customer needs, and continuously updates its products to gain an advantage in market share competition in the robotics industry.

3.2.2. Blue Ocean Strategy

In the continuous development of Ecovacs Robotics, Qian Dongqi proposed the Blue Ocean strategy for home service robots in 2009, aiming to create more robot products. In the face of rapid growth in both quality and quantity requirements, Ecovacs aims to enhance the functionality, intelligence and interactivity of service robots. In terms of functionality, Ecovacs supports AI sweeping and mopping, which has now been developed into a home service robot that not only combines sweeping and mopping, but also has automatic dust collection and cleaning functions. For example, Ecovacs' DEEBOT X1 OMNI product not only features all-in-one cleaning functions, but also includes 3D mapping and the YIKO voice assistant, driving product functionality development. Ecovacs advocates for the era of Robotics 3.0, not only in terms of conceptual explanation, but also focusing on product development, actively obtaining customer feedback on new product requirements, continuously developing in non-competitive market spaces, and providing new directions for market development.

4. Problems in the Development of Ecovacs

4.1. Diversification of Products with Poor Combination Effect

Ecovacs has launched several product categories, including the DEEBOT household floor cleaning robot, WINBOT window cleaning robot, and AIRBOT air purifier robot. However, the development of these products is relatively fragmented, resulting in high sales expenses but poor efficiency, resulting in increased revenue without increased profitability. Therefore, Ecovacs needs to optimize its product portfolio and improve the combination effect.

4.2. Continuous Product Development with Limited Sales of Older Products

While Ecovacs has been focusing on research and development to meet customer needs and expand its presence in the service robot industry, sales of older products are still limited. In order to increase the sales volume of older products, Ecovacs needs to further optimize the product structure and enhance the market competitiveness of these products.

4.3. Focus on the Domestic Market with Relatively Limited Overseas Development

Ecovacs dominates the domestic service robot industry, with the top four brands in the Chinese floor cleaning robot market holding a total online market share of 84.9%, an increase of 5.3 percentage points over the previous year. Ecovacs' floor cleaning robot holds a 40.3% online market share and an 80.0% offline market share in China. However, the company's sales revenue from this product in overseas markets accounted for only 31.8% of the total revenue in 2022, indicating relatively limited development in the international market compared to the domestic market.

4.4. Differentiated Development with a Lack of Distinctive Products

Ecovacs has been increasing its R&D investment, deepening its dual-wheel drive strategy, and fully targeting the high-end market. The proportion of Ecovacs' sales of high-end floor cleaning robots increased significantly from 39% in 2018 to 96.1% in the first half of 2022. However, while the development of high-end products is promising, Ecovacs lacks distinctive and advantageous products that can create new development hotspots.

4.5. Introduction of New Ideas, but development needs to be implemented

Ecovacs pursues diversified development and has introduced intelligent voice assistants, marking the first integration of AI technology into floor cleaning robots and providing new ideas for human-

machine interaction in the industry. While Ecovacs has accumulated a wealth of experience in the development of new product categories, there is still room for improvement in commercializing these products on the market.

5. Future Development Strategies for Ecovacs

5.1. Product Portfolio and Industry Penetration

Ecovacs can increase its product competitiveness and enhance industry penetration by increasing sales volume, driving revenue growth in major product categories through effective product price combinations. Ecovacs has already formed its own market in the home service robot industry after more than 20 years of development. As a result, Ecovacs can continue to innovate in product structure, price combinations, and channel operations, invest in research and development, enhance key technologies, and develop solutions that are closer to consumer environments and meet basic user needs to increase user product satisfaction and enhance industry penetration.

5.2. Healthy Price Reduction for Volume

Based on the current macro environment and product lifecycle, the robot industry may still have a market trend of price reduction in 2023, but it will focus on reducing costs and reducing the price of configuration types. This year, the pressure of price reduction on robot products is still present. As a leading brand, Ecovacs can gradually achieve a "healthy price reduction" of its existing products through scaling and modularization, expand its customer base, and accelerate research and development to continue to drive consumer demand through product innovation.

5.3. Seizing the Trend of National Style and Passing on Intangible Cultural Heritage

Since hand-held broom planning technology was included in the Jizhou Intangible Cultural Heritage in 2019, products such as broom decorations and logo patterns have appeared. Ecovacs can take advantage of this opportunity to display broom patterns on the packaging of floor cleaning robots and create a booklet of intangible cultural heritage to be shipped with floor cleaning robots. The booklet can record the development process of brooms, from chicken feather materials to bamboo and grass brooms, to brooms made of reeds and sorghum poles included in intangible cultural heritage, and finally to today's floor cleaning robots. While passing on intangible cultural heritage, the two can jointly create a new trend of national style.

5.4. Full Digitalization of the Supply Chain, Focusing on the Core

Ecovacs can continuously improve measures and use lean technology to optimize and improve systems, equipment and personnel, aiming to enhance operational efficiency and create a solid foundation for business operations. In addition, Ecovacs aims to develop comprehensive digital management solutions and launch a collaborative global supply chain platform to facilitate rapid decision-making, achieve production and sales balance, and respond quickly to market demands.

5.5. Expanding Overseas to Serve Customers

The Ecovacs brand will drive the landing of new robot products with high-end technology in overseas markets, thus increasing Ecovacs' global market share in the floor cleaning robot category. This expansion will also enable Ecovacs to break through indoor to outdoor scenarios for core service robot technologies and expand from household to commercial categories. By fully integrating resources into the European market, Ecovacs will promote the launch of lawn mowing robots to increase the robotization rate in the lawn care tool market.

5.6. Expanding Commercial Use for Dual Growth Engines

Ecovacs focuses on the development of multiple product categories and has been committed to building core competitive capabilities over the years. Throughout its 25 years of development, Ecovacs has accumulated extensive experience in trial and error, active adjustments, and structural optimization to understand customer needs and conduct targeted product development. By promoting and marketing new products, Ecovacs can enter new market areas and strive for greater market share, thereby increasing its competitive advantage and business scale, and creating new sources of revenue.

6. Summary

In conclusion, as the floor cleaning robot industry continues to evolve, strategic measures need to adapt to market changes. Ecovacs, as a leading company in the field of floor cleaning robots, adheres to the mission of making robots serve everyone and implements various diversified strategies and competitive strategies to continuously increase its market share in the high-end market. However, in the face of intense competition in the current robotics industry, Ecovacs can continuously innovate its strategies. By seizing the opportunity to inherit intangible cultural heritage, Ecovacs can launch broom floor cleaning robots that combine product innovation with the transmission of intangible cultural heritage. This collaboration can create a new trend in the market and enable Ecovacs to gain new advantages in the competitive floor cleaning robot industry. While promoting its own development, Ecovacs can fulfill its mission of making robots serve everyone and provide a more intelligent and convenient experience for the market and consumers.

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