

Analysis of NIO's Business Model Strategy

Ziyang Wang ^a

*College of Artificial Intelligence, Nanjing University of Information Science and Technology,
Ningliu Road, Pukou District, China*

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Abstract: In recent years, driven by global energy transformation and carbon emission reduction strategies, the new energy vehicle (NEV) market is undergoing disruptive changes. NIO, as one of the numerous NEV companies, has gradually formed a three-dimensional business model encompassing product research and development, energy services, user communities, and digital ecosystems by establishing a differentiated positioning as a "user-centric enterprise". Formulating reasonable strategies plays a crucial role in its development and market expansion. This article analyzes NIO's business model and strategies, employs SWOT analysis to examine its internal and external strengths, weaknesses, and threats, and proposes suggestions for its improvement and profitability. Furthermore, through the Porter's Five Forces model analysis, this article finds that some of NIO's strategies still require improvement and innovation.

1 INTRODUCTION

Chinese car companies have expanded their overseas markets through the "ecological co construction" model, such as Chery's joint venture to build a factory in Spain and BYD's construction of the largest electric vehicle production base in ASEAN in Thailand, driving a 5800% increase in local production capacity (Schröder et al., 2021). Chinese power battery companies (such as CATL) have a leading global market share, with over half of their installed capacity in overseas markets and technology output covering Europe, America, and Southeast Asia. The EU has imposed high tariffs on Chinese new energy vehicles, forcing car companies to accelerate localized production to avoid policy risks (Hu et al., 2022). Multinational car companies (such as Bosch) need to adapt to the market demand for "Chinese speed" and rapid iteration to strengthen local research and development in China, and the traditional "two ends out" model is difficult to sustain. The United Nations calls for 20% of global road vehicles to be electrified by 2030, with China setting a benchmark with a 50% penetration rate of new car electrification, driving developing countries to transition to 30% zero emission vehicles by the year. International forums promote the establishment of

technology standards and cross-border data flow mechanisms to address supply chain fluctuations and infrastructure imbalances.

China's production and sales of new energy vehicles have ranked first in the world for 10 consecutive years, accounting for over 70% of the global total, and the penetration rate has exceeded 40%. The government continues to promote industrial development through subsidy policies such as car purchase subsidies and support for charging facility construction and plans to further strengthen green transformation through the "dual carbon" goal. The Ministry of Ecology and Environment has proposed to focus on promoting the coordinated development of carbon reduction, efficiency improvement, and technological innovation in the industrial chain by 2025. In addition, significant breakthroughs have been made in new energy vehicle battery technology, with lithium iron phosphate batteries accounting for 81.5% of the total installed capacity. Energy density and cycle life continue to improve, and the average range is expected to exceed 600 kilometers by 2025. Intelligence has become the core direction, and the commercialization process of L4 level autonomous driving is accelerating. Companies such as Huawei and Xiaopeng are increasing their investment in intelligent driving systems and vehicle road

^a <https://orcid.org/0009-0008-9334-8642>

collaboration. Accelerating the restructuring of the supply chain, cost reduction, digitization, and intelligence go hand in hand. For example, Huawei collaborates with car companies to promote ecological synergy, and car companies alleviate production capacity bottlenecks by building factories overseas (Chen, 2023). Leading companies such as BYD and CATL dominate the market, with CATL's power battery market accounting for nearly 40%. Traditional car companies (such as SAIC and FAW) collaborate with technology companies (such as Huawei and Volkswagen) to build "ecological synergy" barriers, while central enterprises' restructuring plans further integrate resources to enhance global competitiveness. Consumer preferences are leaning towards intelligence and personalization, with female car buyers and lower tier markets (third-and fourth tier cities) becoming new growth points. NIO, Ideal and other brands seize segmented markets through differentiated products such as battery swapping modes and home scenario models.

NIO, founded in 2014 and headquartered in Shanghai, is a Chinese company specializing in high-end intelligent electric vehicles. The company aims to promote the popularization of electric vehicles through technological innovation and user experience improvement and has now become one of the leading enterprises in China's electric vehicle industry (Xiao, 2017). At present, the competition in the new energy vehicle field is becoming increasingly fierce - Tesla continues to lower prices to squeeze market space, traditional car companies are accelerating their electrification transformation, and China's "dual carbon" policy and the window period of global energy transformation provide strategic opportunities for technology driven enterprises. NIO has demonstrated impressive development potential with its unique business model and strategy. This article provides reasonable profit recommendations by analyzing the innovation of its business model and strategy.

2 NIO'S BUSINESS MODEL AND INNOVATION POINTS

2.1 User Driven Business Model Innovation

NIO regards users as brand co builders and builds online and offline communities through NIO App, NIO Day, user trust funds, and other platforms. Users

can participate in product design (such as voting on seat schemes), event planning (NIO Day proposed by users), and even invest in NIO (a company owned by a user trust). NIO House/NIO Space does not simply sell cars, but provides lifestyle spaces such as cafes, libraries, and children's areas. Sales consultants have transformed into "user consultants," with assessment indicators focusing on user satisfaction rather than sales volume (Pan and Liang, 2021). Users do not need to purchase batteries when purchasing a car, and the ownership of the batteries belongs to NIO (BaaS operator). Users pay monthly battery rent (such as 980 yuan per month for a 75kWh battery). Users can upgrade the battery capacity according to their needs (such as switching from 70kWh to 100kWh), alleviate range anxiety, and extend the vehicle's lifespan. BaaS lowers the threshold for purchasing cars (reducing car prices by 70000 to 128000 yuan) and increases sales; Weileng can retrieve funds through asset securitization (ABS) to generate sustainable cash flow. Services such as one click power on, on-site maintenance, and customer charging are paid on demand, with service revenue accounting for over 10% in 2022. Self-operated lifestyle brand, selling peripheral goods (clothing, home furnishings), with a revenue of over 1 billion yuan and a gross profit margin of over 60% in 2021, enhancing user stickiness.

2.2 Technology Driven Product Strategy

NIO has a fully self-developed modular platform that supports high-level autonomous driving (LiDAR+4 NVIDIA Orin chips, computing power 1016TOPS) and upgradable electronic and electrical architecture (supporting FOTA). The only high-end electric vehicle platform in the world that supports battery swapping, which can be completed in 3 minutes. As of 2023, there will be over 2000 battery swapping stations worldwide, with a total of over 30 million battery swaps. Navigation assisted driving based on high-precision maps will launch a subscription system (monthly fee of 680 yuan) in 2023 to achieve software revenue growth. Invest in chip companies such as Black Sesame Intelligence and plan to launch self-developed AD chips. The algorithm team accounts for over 40%, and the data loop is optimized through real-time feedback from user vehicles. The ET7 is equipped with a second-generation electric drive, which improves efficiency by 5% and increases the range by 50km. In 2022, a 150kWh semi-solid state battery pack (energy density 360Wh/kg) will be

released, and mass production is planned for 2024, with a range exceeding 1000km.

2.3 Reconstruction of Energy Service System

NIO's single station battery compartment has increased to 13 units, with a daily service capacity of 312 times and support for automatic parking entry. As a distributed energy storage node, the battery swapping station participates in power grid peak shaving (such as Shanghai battery swapping station charging during low hours at night and reverse power supply during peak hours during the day). NIO has deployed over 1000 battery swapping stations in eight northern provinces of China, addressing the pain points of low temperature range and increasing market penetration. In addition, NIO has partnered with CATL to recycle materials such as nickel and cobalt, from new cars to battery swapping stations to energy storage and recycling, with a recovery rate of over 99% (Chen et al., 2022).

2.4 Development Strategy

In terms of globalization and localization strategies, NIO has launched vehicle subscription services (including insurance and maintenance) in Germany and Norway, with a monthly fee of approximately 1200-1500 euros, reducing the threshold for users to try and quickly accumulating local user data (Pisano et al., 2023). Norway's battery swapping stations are adapted to European standards, with plans to build 120 stations in Europe by 2025 and collaborate with local energy companies such as Norwegian National Petroleum on charging networks.

In addition, NIO is committed to building a capital and ecological synergy system. The Hefei Municipal Government has made a strategic investment of 7 billion yuan, and the bet agreement requires a revenue of 120 billion yuan by 2024 to drive the Hefei new energy vehicle industry chain cluster (such as introducing Volkswagen Anhui and Guoxuan High tech). In 2023, NIO will open up battery swapping technology to the industry and cooperate with companies such as Changan and Geely to promote the standardization of battery swapping standards and expand its ecological discourse power.

NIO also promotes its sustainable development strategy (Wang, 2024). NIO has committed to achieving full supply chain carbon neutrality by 2025, tracking the carbon footprint of its batteries using blockchain technology, and providing 100% green electricity to its factories (with a rooftop photovoltaic

coverage rate of 90% at its Hefei factory). The interior of ES6 adopts the world's first bio-based polyamide material (extracted from castor oil), with a vehicle recycling rate of over 95%.

3 SWOT ANALYSIS AND PORTER'S FIVE FORCES MODEL ANALYSIS OF NIO

3.1 SWOT Analysis

In terms of advantages, NIO has established a high level of user loyalty through a strong user community culture, such as NIO House and NIO App. The interaction between users and enterprises is frequent and deep, forming a unique brand moat. NIO is the only car company in the world that promotes battery swapping on a large scale, with a network of 3140 battery swapping stations, providing 5-minute fast energy replenishment services, solving range anxiety, and becoming the core of differentiated competition. Auto drive systems and NOMI are in the first echelon of the industry, and investment in technology R&D continues to increase, promoting product competitiveness. In the initial stage, we entered the high-end market with over 300000 yuan and created a brand image that combines technology and luxury, attracting high net worth users (Chen, 2024).

NIO's development also has disadvantages. NIO has invested over 30 billion yuan in the construction of battery swapping stations, with high operating costs and long return cycles, especially in third - and fourth tier cities where coverage is insufficient, leading to increased pressure on the funding chain. Overreliance on the high-end market and the trend of consumer downgrading have led to a shrinking audience of over 300000 car models, while the low-priced sub brand "Ledao" has failed to open up the market and fallen into the dilemma of "high cannot achieve low". The financing model relies on debt financing, with a low proportion of equity financing, a single financing channel, and high financial risks.

In terms of opportunities, global environmental policies have promoted the penetration rate of new energy vehicles, and policies such as China's "New Energy Vehicle Industry Development Plan" continue to provide subsidies and technical support. Breakthroughs in battery technology (such as solid-state batteries) and autonomous driving technology may further reduce production costs and improve product cost-effectiveness. We have entered European markets such as Norway, and in the future,

we can diversify market risks and enhance brand influence through overseas expansion.

At the same time, NIO's development is also facing fierce competition. Top companies such as Tesla and BYD dominate the market share, while new forces such as Ideal and Xiaopeng accelerate product iteration. Traditional car companies (such as Volkswagen and Toyota) are transitioning to new energy to intensify competition. The technology of hydrogen fuel cell vehicles is gradually maturing, and traditional fuel vehicles still have advantages in areas with incomplete infrastructure. The shared travel mode diverts short distance demand. Global economic fluctuations affect demand in the high-end market, and the reduction of government subsidies may weaken price competitiveness.

3.2 Porter's Five Forces Model Analysis

In terms of bargaining power among suppliers, it shows a high characteristic. Battery suppliers (such as CATL) have strong bargaining power due to technological monopolies and resource concentration (lithium, cobalt, etc.), and NIO needs to reduce dependence through long-term cooperation or self-developed technology. The key components such as autonomous driving chips and motors rely on a few suppliers, and the high technical threshold limits their bargaining power.

In terms of the bargaining power of buyers, it shows a moderate to high characteristic. The competition in the new energy vehicle market is fierce, and consumers can compare prices, configurations, and services, forcing companies to optimize cost-effectiveness. Major clients such as taxi companies and logistics companies are using bidding to lower prices and demand customized services and cost control.

In terms of potential competitors' entry threats, it exhibits moderate characteristics. Volkswagen, Toyota, and others are accelerating their layout of new energy by leveraging their manufacturing experience and financial advantages, squeezing market space. Xiaomi, Baidu, and others have entered the automotive industry through intelligent technology, but they need to overcome the shortcomings in production qualifications and supply chain management.

In terms of the threat of substitutes, it exhibits moderate characteristics. (Medium) traditional fuel vehicles still dominate the mainstream market in the short term, especially in areas with inadequate

charging facilities. Hydrogen fuel cell vehicles may enter the pure electric market after the technology matures but are currently constrained by costs and infrastructure.

NIO is facing fierce industry competition. Tesla and BYD, led by top companies, have gained advantages through economies of scale and technological leadership, while NIO needs to break through with differentiated competition (such as battery swapping services). Price war and technology competition: Enterprises continue to launch high range, low-priced models, and autonomous driving and intelligent connectivity technologies have become the focus of competition (Hao et al., 2025).

In summary, NIO's core competitiveness lies in user operation and battery swapping technology, but it needs to address the challenges of shrinking high-end markets and high battery swapping costs. In Porter's Five Forces model, with fierce industry competition and high bargaining power of suppliers, NIO needs to address risks through technology research and development, optimization of battery swapping models (such as introducing third-party cooperation), and channel expansion (expanding to third - and fourth tier cities). In the long run, the globalization layout and the launch of models with a volume of 150000 to 200000 yuan may become the key to breaking the deadlock.

4 NIO'S PROFIT STRATEGY

4.1 Strengthen Technological Innovation

The development of the new energy vehicle industry requires continuous injection of innovative thinking and technological breakthroughs. In the construction of its R&D system, NIO should focus on introducing high-end technical talents and strengthening its independent innovation capabilities. The commonly existing 8–15-year service life cycle of power batteries, as well as the subsequent replacement costs of tens of thousands of yuan, has become an important technical bottleneck that restricts consumers' purchasing decisions. In response to the pain points in this industry, it is recommended that NIO break through from the field of materials science and focus on developing new electrode materials and electrolyte formulations to extend the service life of batteries. At the same time, NIO should establish a battery lifecycle management system and develop modular replaceable designs, establish technical specifications for hierarchical utilization, so that

retired batteries can be effectively applied to energy storage systems and other scenarios, ultimately forming a green closed loop from production, use to recycling, and minimizing the risks of heavy metal pollution and resource waste.

4.2 Adjust Financing Structure

NIO and CATL jointly build a battery swapping network to attract more car companies to join the ecosystem (such as Changan and Geely) and share infrastructure costs. In addition, China's "dual carbon" policy subsidies and the European Green Transition Fund provide financial support. At the level of capital operation strategy, NIO urgently needs to build a composite financing ecosystem to break through the limitations of traditional financing models. Empirical studies have shown that the endogenous financing model that overly relies on retained earnings reinvestment exposes companies to liquidity mismatch risk (with a current ratio lower than the industry average of 15%). Suggest implementing a "dual wheel drive" financing strategy. On the one hand, deepen strategic credit cooperation with commercial banks and explore the application of mixed capital tools such as convertible bonds and perpetual bonds; On the other hand, accelerate the integration with multi-level capital markets and optimize the balance sheet.

4.3 Reduce Costs and Expand Visibility

As a latecomer in the new energy vehicle industry, NIO is facing significant market penetration challenges. According to industry research data, new energy brands generally face structural difficulties with sales expense ratios exceeding 35% during the introduction period. It is recommended that NIO implement a precision marketing strategy by building a digital integrated marketing communication system, combining user community operations with scenario based experiential marketing, to enhance brand value perception. NIO can increase brand awareness through advertising or collaborations with other well-known companies, thereby reducing cost investment, enhancing the company's profitability, and increasing profits.

5 CONCLUSION

In today's fiercely competitive new energy market, whether a new energy vehicle company can clearly recognize its own advantages and positioning is the

key to its survival. This article uses SWOT and Porter's Five Forces analysis methods to conduct a comprehensive analysis of NIO's enterprise, revealing its internal and external advantages and disadvantages, and providing several reasonable profit paths for NIO through the above analysis. At present, how NIO can leverage its own advantages to turn losses into profits is its top priority for achieving sustainable development. Focus on strengthening technological innovation, adjusting financing structure, reducing costs, and expanding visibility.

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