Proceedings of CONF-BPS 2026 Symposium: Sustainability Transitions and Regional Economic Restructuring in New Contexts
DOI: 10.54254/2754-1169/2026.NJ30055

The Application Strategies of New Energy Vehicles in the Market: Taking Tesla and NIO as Examples

Zhongzheng Liu

Institute of Santa Monica University, Santa Monica, USA
GallesWilkinson5877@outlook.com

Abstract. China's "dual carbon" strategy and the global energy transition have intensified competition in the new energy vehicle market. Exploring the core competitiveness of enterprises holds significant industry value. This article takes Tesla and NIO as the research objects and uses the case comparison method to analyze their competitive strategies. The research finds that Tesla, with technology-driven and globalized efficient Model at its core, relies on the coordinated development of its main automotive business (Model 3/Y as the main force) and secondary industries such as energy storage and solar energy. Although it faces political risks and cash flow pressure, its technology monetization and cost advantages still have potential. Nio, on the other hand, focuses on building a localized ecosystem. It builds its advantages through multi-brand layout, battery swapping services and technology output. However, its profits are fragile and it faces fierce market competition. The conclusion indicates that there is no single successful model in the new energy vehicle market. Enterprises need to disrupt the traditional business model to build an ecosystem of "products + energy + software + services", achieve diversified profits to enhance their risk resistance capabilities, and provide references for differentiated competition in the industry.

Keywords: Nio, Tesla, electric car

1. Introduction

Globally, in response to the challenges of climate change and energy security, the world is facing a wave of energy transition centered on "green and low-carbon" As market potential continues to be unleashed, the competitive landscape of the industry is undergoing a dramatic reshaping. Traditional automotive giants are accelerating their transformation towards electrification, technology companies are crossing over to enter the smart car market, and new force brands are constantly rising.In recent years, the entire European Union (EU) has increasingly emphasized energy transition and the transition from fossil fuels to renewable energy. The "Green Deal" adopted by the European Union in 2019 and the "Fit for 55" plan adopted in 2021 are particularly important in this regard. The first one is the plan for the EU economy to achieve "zero emissions" and energy independence by 2050 [1].

This has rapidly transformed the new energy vehicle market from an early "blue ocean" to a "red ocean", and the competition dimension has extended from a single product competition to the entire chain including technology, services, and ecosystems. Against this backdrop, the development paths

DOI: 10.54254/2754-1169/2026.NJ30055

chosen by different enterprises show significant differences. How to build core advantages and achieve sustainable growth in homogeneous competition has become a key issue commonly faced by the industry.

As a global benchmark enterprise in electrification, Tesla and NIO, as representative brands of new forces, have respectively occupied important positions in the market with their unique operational strategies. Their strategic choices and development practices have significant reference value for the industry. Therefore, the research on differentiated strategies has distinct practical significance.

With the enhancement of environmental awareness and the development of the sharing economy, the market demand for new energy vehicles is constantly increasing. The enhancement of environmental awareness is one of the important factors driving the growth of the market demand for new energy vehicles. As the global climate change issue becomes increasingly severe, people's attention to environmental protection is constantly rising, and the demand for green travel is also growing day by day. New energy vehicles, with their zero-emission or low-emission features, have become an important choice for green travel. Consumers are increasingly inclined to purchase new energy vehicles to reduce environmental pollution and practice the concept of environmental protection. In many cities, new energy vehicles enjoy some special policy benefits due to their environmental advantages, such as free parking and no traffic restrictions, which further attracts consumers to choose new energy vehicles.

To answer the above questions, this paper selects Tesla and NIO as core cases for comparative study. The two are not merely competitors, hey represent two completely different yet highly successful strategic path models, which are of great value for comparative study.

2. Tesla's sales and competitiveness

Tesla is undoubtedly a pioneer in global electrification. The core of its strategy is technology-driven, and it is tearing the market apart with its absolute technological innovation strength.

In terms of service, direct stores and online sales are combined, covering major cities and continuously expanding to remote areas. The main models for sale are Model 3/Y (accounting for 97.3% of the delivery volume in the first half of 2025). Cybertruck (sales failed to meet expectations due to quality issues); Model S/X (High-end Market) Revenue reached 30.6 billion US dollars (in the first half of 2025), accounting for 73.2% of total revenue, a year-on-year decline of 18%. In addition, the secondary industry revenue is mainly concentrated in energy storage systems: Megapack (commercial) and Powerwall (household), with the deployment volume reaching a new high in a single quarter in Q2 2025, and Solar energy: Solar Roof (integrated with buildings). Revenue reached 5.519 billion US dollars (in the first half of 2025), accounting for 13.2%, with a growth rate of 67% in Q1 and a decline of 7% in Q2 due to fluctuations in demand.The Tesla has undoubtedly proved itself to be a force that cannot be ignored in the automotive industry. However, before competing with the strength of other established car companies, they still have a lot to do. Quickly overcoming these economic, cultural and competitive obstacles will determine whether Tesla can succeed in the long term [2]. On the other hand, it is in the window period for technology monetization, and FSD has great potential for subscription revenue (China's 64,000 yuan buyout plan, with a subscription rate target of 30% by 2027). Coupled with a 35% growth rate in the energy business, it can offset the decline in the automotive business. Powerwall's single-quarter deployment reached a new high. Megapack, in collaboration with supercharging stations, participated in peak shaving for the power grid, generating over $2,000 in daily revenue for a single station. The gross profit margin of the energy business reached a record high of $846 million. It also enjoys the policy

DOI: 10.54254/2754-1169/2026.NJ30055

vacuum dividend. After the United States ended electric vehicle subsidies in September, Tesla's vertical integration cost advantage (the self-production cost of 4680 batteries dropped by 14%) will be magnified, and its endurance in price wars may surpass that of competitors relying on subsidies. On the other hand, Tesla is facing the backlash of political risks. Musk's political inclination has led to a sharp drop in sales in the German market, and the brand boycott wave may spread to other EU countries. The US tariff policy has raised the cost of the Model 3 made in China, and the production capacity ramp-up at the Berlin/Mexico factories is lagging behind. The cash flow has also faced a crisis. The free cash flow is only 100 million US dollars. The price war has eroded profits. If the yield rate of the 4680 battery (currently 93%) or the commercialization of RoboTaxi in Texas is delayed, it may trigger a rapid depletion of 36.8 billion US dollars in cash reserves.

Due to the strong sales of the third-generation electric vehicles Model 3 and Model Y, Tesla has now achieved profitability and no longer needs to issue stocks to raise cash to fund its innovation strategy. Apart from the acquisition of SolarCity in 2016, Tesla has also completed other major acquisitions with the shares it holds [3].

3. Tesla’s threats and opportunities

3.1. Opportunities

Technology monetization window period: FSD subscription revenue has great potential (64,000 yuan buyout plan in China, with a subscription rate target of 30% by 2027), coupled with a 35% growth rate in the energy business, which can offset the decline in the automotive business.

The energy storage sector is booming: Powerwall's single-quarter deployment has reached a new high. Megapack, in collaboration with ultra-fast charging stations, participates in grid peak shaving, generating over $2,000 in daily revenue per station. The gross profit margin of the energy business has reached a record high of $846 million.

Policy vacuum dividend: After the United States ended electric vehicle subsidies in September, Tesla's vertical integration cost advantage (the self-production cost of 4680 batteries dropped by 14%) will be magnified, and its endurance in price wars may surpass that of competitors relying on subsidies.

3.2. Threats

Political risk backlash: Musk's political leanings have led to a sharp decline in sales in the German market, and the wave of brand boycotts may spread to other EU countries. The US tariff policy has raised the cost of Chinese-made Model 3, and the capacity ramp-up at the Berlin/Mexico factories has lagged behind.

The technological myth collapses: Cybertruck's eight recalls expose quality control flaws, the annual production target of 250,000 units falls through, damaging the narrative of "disruptive innovation". The accelerated electrification of traditional automakers has led to a halving of carbon credit revenue (439 million US dollars).

Cash flow crisis: Free cash flow is only 100 million US dollars. The price war has overdrawn profits. If the yield rate of 4680 batteries (currently 93%) or the commercialization of RoboTaxi in Texas is delayed, it may trigger a rapid depletion of 36.8 billion US dollars in cash reserves.

DOI: 10.54254/2754-1169/2026.NJ30055

4. Nio's market application strategy

Nio, with its core positioning of high-end, intelligent and service-oriented, is committed to creating an ultimate electric vehicle experience for consumers and has formed a significant differentiated competitive advantage in the market. In terms of high-end positioning, NIO has established a luxurious brand image with its outstanding design, high-quality interior and advanced configuration. Take the ES6 as an example. Its exterior design features smooth lines, a strong sense of technology and futurism, highlighting its unique personality. The interior is made of a large amount of high-quality materials, such as Nappa leather seats and solid wood trim panels, combined with exquisite stitching techniques, creating a luxurious and comfortable driving and riding environment. The vehicle is equipped with high-end configurations such as a panoramic sunroof, a high-end audio system, and multi-zone automatic air conditioning, providing users with an ultimate comfortable experience. In terms of power performance, the ES6 is equipped with a high-performance dual-motor all-wheel drive system, with a maximum power output of up to 490 horsepower. It can accelerate from 0 to 100 kilometers per hour within 4.5 seconds, offering strong power and excellent handling performance. Compared with its competitors in the same class, such as BMW iX3 and Audi Q5 e-tron, NIO ES6 is more luxurious and tech-savvy in design, interior and power performance, demonstrating the strength of a high-end brand.

Nio is also a rising star in China's new energy vehicle market. Just like Tesla, it has embarked on a multi-brand and multi-development path, generating revenue from both new energy vehicles and energy sources. The revenue from the automotive business in 2024 is approximately 25.939 billion to 26.439 billion yuan (9.939 billion yuan in Q1 + expected 16 to 16.5 billion yuan in Q2), accounting for 82.2% to 82.3% of the total revenue. The growth rate of automotive business revenue: 18.6% year-on-year in Q1, and approximately 11.8% year-on-year in Q2, mainly due to the increase in sales of the Ledao brand (14,800 units delivered in Q1, with an expected growth of over 40% in Q2) and the facelift of the main brand models. Energy revenue was approximately 5.608 to 5.663 billion yuan (2.095 billion yuan in Q1 + estimated 3.513 to 3.568 billion yuan in Q2), accounting for 17.7% to 17.8%. Energy revenue growth rate: 37.2% year-on-year in Q1. The growth rate is expected to slow down in Q2, but the revenue from battery swapping and BaaS (Battery Leasing) will contribute significantly. The proportion of BaaS users has increased to 65%, with an annualized rental income of 2.8 billion yuan. With the increase in the penetration rate of battery leasing, the charging volume of battery swap stations rose by 60% year-on-year in Q1, and the contribution of subscription service revenue also increased. In addition, the various technologies developed by the company have gradually brought cash flow returns through licensing, cooperation and other means. For instance, the company has reached a technology licensing agreement with Forseven, authorizing it to use the technology of NIO's intelligent electric vehicle platform, and the revenue from technology output has begun to increase significantly. Nio's strength lies in its multi-brand market capture and technology output monetization. In the second quarter of 2024, the Ledao will deliver 17,000 units (with a growth rate of over 40%) to capture the 200,000 to 300,000 yuan family market. The Firefly, with its 100,000-yuan class models, will expand its battery swap network, reducing costs by 25% but reusing 75% of its supply chain. It has greatly reduced the cost. And with the Forseven technology licensing agreement, the semi-solid battery (360Wh/kg) may be licensed to third parties, opening up a new track for patent revenue. The downside lies in the fragile profit path. In the first quarter of 2025, the net loss was 6.75 billion yuan (an increase of 30% year-on-year), and it relied on financing to replenish capital (4.03 billion Hong Kong dollars in April). If the target of the gross profit margin rising to 15% is failed, it may lead to a collapse of trust in the capital market. The Ledao brand needs to contend with competition from BYD and XPeng.

DOI: 10.54254/2754-1169/2026.NJ30055

5. Nio's threats and opportunities

5.1. Opportunities

Battery swapping ecosystem moat :80 million battery swapping services, over 4,000 battery swapping stations form a "9 vertical and 11 horizontal" network, and the 65% penetration rate of the BaaS model locks in the full life cycle value of users (annualized rent of 2.8 billion yuan).

Multi-brand market harvesting: Ledao delivered 17,000 units in Q2 (with a growth rate of over 40%) to capture the 200,000 to 300,000 yuan family market. Firefly, with its 100,000-yuan class models, has expanded its battery swap network, reducing costs by 25% but reusing 75% of its supply chain.

Technology output monetization: The technology licensing agreement with Forseven has been implemented, and semi-solid batteries (360Wh/kg) may be licensed to third parties, opening up a new track for patent revenue.

5.2. Threats

The profit path is fragile: The net loss in Q1 was 6.75 billion yuan (up 30% year-on-year), and it relied on financing to replenish capital (4.03 billion Hong Kong dollars in April). If the target of the gross profit margin rising to 15% is failed, it may trigger a collapse of trust in the capital market.

The heavy asset trap of battery swapping: 3,405 battery swap stations require continuous investment. If the proportion of low-priced models like Firefly increases, it may dilute the revenue from battery swapping per vehicle.

Technology generation gap risk: Autonomous driving chips rely on NVIDIA's Orin (with a computing power of 254TOPS), lagging behind Tesla's self-developed AI6 chip (2EFLOPS). Chinese technology companies' cooperation in AI applications has not yet formed a data closed loop.

6. A comparison of market strategies between tesla and NIO

Alps, a sub-brand of NIO, one of China's most renowned pure electric vehicle manufacturers, seems set to follow Tesla's "visual-first approach". According to recent reports, Alps will adopt a full-camera approach without liDAR to implement an intelligent driving system. It is reported that the main purpose of adopting a pure vision system is to reduce the cost of Alps. Chinese media HiEV, citing multiple sources, reported that Alps' intelligent driving system will be based on a single Nvidia Orin X chip and will not use lidar. This is quite different from the current product line of NIO, which is based on its NT 2.0 platform. The NT 2.0 platform is standardly equipped with a lidar and an Adam supercomputer driven by four Orin chips. NIO is a major competitor in the high-end market, while Alps is expected to compete with its rivals in the mainstream market. It is expected that the first Model of the NIO sub-brand will be an SUV and should be able to compete with the Tesla Model Y. The Tesla Model Y is one of the best-selling electric vehicles in China and also the main force of Tesla's global sales. According to CNEV Post, the expected Model Y competitor will be priced between 200,000 yuan ($28,099) and 250,000 yuan ($35,124), which will give it a price advantage over Tesla's all-electric products. By contrast, the rear-wheel drive version of the Model Y currently produced at Giga Shanghai, which is the cheapest version of this model, is priced at 258,900 RMB ($36,374) [4].

The automotive industry is at a critical juncture of development. Elon Musk's Tesla, as well as new entrants such as Chinese automakers Byton and Nio, have not only pioneered innovative

DOI: 10.54254/2754-1169/2026.NJ30055

technologies for powering cars, but also created new intelligent systems for manufacturing cars. Although this study conducted an in-depth analysis of Tesla and NIO when exploring the market application strategies of new energy vehicles, there are still certain limitations.

The following item research was conducted by sending electronic surveys to Egyptian consumers. This link was sent to MBA students in the three cities of Alexandria, Cairo and Mansoura. Participants were asked to share with their colleagues, and respondents filled out a total of 323 questionnaires. Data collection was completed two weeks later because the sample size met the minimum sample size (200) recommended by Hair et al. For SEM [5]. The gender distribution of the statistical samples was 54.2% male and 45.8% female, with an average age of 30.7 years. 57% of the respondents hold a postgraduate degree, and 41.7% hold a university degree. Traditional car owners account for 82% of the sample, while those with electric or hybrid vehicles make up 4% of the sample. 1.9% of people own traditional, electric or hybrid cars, while 12.1% do not own a car. 47.4% of the samples had an income level of less than 15,000 LE per month; 27.9% of people have a monthly income ranging from 15,000 to 30,000. Thirteen percent of people earn between 30,000 and 50,000 yuan per month. 5.9% of people have a monthly income ranging from 50,000 to 75,000 yuan, and 5.9% have a monthly income exceeding 75,000 yuan [6].

According to the data from the Polish Alternative Fuels Association (PAFA), as of the end of 2022, a total of 31,249 electric vehicles were registered in Poland [7]. Research conducted in Norway indicates that the share of electric vehicle sales in total vehicle sales will increase. Research conducted in Norway indicates that the share of electric vehicle sales in total vehicle sales will increase. Norway is a leading country in terms of the distribution of electric vehicles. The sales of new electric vehicles rose from 0.07% in 2013 to 86.2% in 2021, among which 64.5% of BEVs and 21.7% of PHEVs (Plug-in Hybrid Electric Vehicles) were registered in 2021 [8]. In the recent years, in most developed countries, the number of new electric vehicles has increased sharply. Eurostat reported that in Germany, the number of new electric vehicles increased from 194,163 in 2020 to 470,559 in 2022, and in France, it rose from 112,499 to 207,171. The number of cars in the UK increased from 15,579 in 2018 to 263,197 in 2022 (the data for 2019-2020 was not available) [9].

From the above content, the author can be seen that, whether in other developing countries like Egypt or in developed countries, there are still vast resources and industries waiting to be developed for electric vehicles. This further confirms the potential that still exists in this market. In the current electric vehicle market, it is a vast and unexplored area. Consumers' willingness to purchase pure electric vehicles is the result of the combined effect of factors such as population, context and psychology [10].

The research sample only selected two representative enterprises, Tesla and NIO, which may not be able to comprehensively cover the strategic characteristics and development models of all enterprises in the new energy vehicle market. Future research can expand the sample range to include more new energy vehicle enterprises of different types and scales, so as to have a more comprehensive understanding of the overall market picture.

Tesla and NIO have adopted different application strategies in the new energy vehicle market, each with its own advantages and characteristics. Tesla has taken the leading position in the market by virtue of technological innovation and global layout. Nio has gained a foothold in the domestic high-end new energy vehicle market through its high-quality user experience and services. However, both enterprises are also confronted with challenges in market competition, technological innovation, policies and regulations, etc. In the future development, the two enterprises need to constantly optimize their strategies and enhance their competitiveness to cope with the changes and challenges in the market.

DOI: 10.54254/2754-1169/2026.NJ30055

7. Conclusion

This study, by comparing the market application strategies of Tesla and NIO, reveals the core logic of differentiated competition in the new energy vehicle industry. Research shows that Tesla, with technology-driven and global layout at its core, has built cost and technological barriers by leveraging its technological advantages such as 4680 batteries and FSD autonomous driving, as well as its diversified business that integrates automobiles with energy storage and solar energy. However, it also faces issues such as political risks, cash flow pressure, and quality control. The root cause lies in geopolitical conflicts in global operations, the erosion of profits by price wars, and the imbalance in the pace of technology commercialization. Nio focuses on building a localized ecosystem, covering different price ranges with a multi-brand matrix, locking in user value through battery swapping services and the BaaS model, and opening up new revenue channels through technology output, thus forming a unique competitive advantage.

However, its challenges such as fragile profits and technological generation gaps mainly stem from the financial pressure of its heavy asset model, the difficulty in balance between the high-end and mass markets, and its reliance on foreign core technologies. The significance of this research lies in providing the industry with two successful paradigms that can be referred to, proving that there is no single optimal solution in the new energy vehicle market. The ecological competition of "products + energy + software + services" and the diversification of profit models are inevitable trends. This conclusion not only provides strategic references for traditional automakers' transformation but also offers ideas for new force brands to accurately position themselves, which is conducive to promoting the industry to achieve high-quality development in differentiated competition.

This study has objective limitations. It only selects Tesla and NIO as cases and fails to cover the strategic characteristics of different types of market participants such as traditional automakers and small and medium-sized brands. Future research can expand the sample range to include more enterprises of different scales and positioning. At the same time, by combining quantitative research methods, it can deeply analyze the input-output efficiency of each strategy, providing more accurate empirical support for the optimization of industry competition strategies.

References

[1] Ziemba, P., Kannchen, M., & Borawski, M. (2024). Selection of the Family Electric Car Based on Objective and Subjective Criteria—Analysis of a Case Study of Polish Consumers. Energies, 19961073.
[2] Gobble, M. M., & Blau, J. (2019). ME-Cars Drive Germany's Tech Future. Research-Technology Management.
[3] Alghalith, N. (2018). TESLA: Innovation with Information Technology. International Journal of Business Research and Information Technology, 5(1). International Academy of Business and Public Administration Disciplines.
[4] Alvarez, S. (2024). NIO sub-brand Alps to adopt Tesla-esque pure vision system: report. Teslarati. https: //www.teslarati.com/nio-alps-adopts-tesla-pure-vision-system-report/
[5] Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis (7th ed.). Prentice Hall.
[6] Yacout, O. M. (2023). Personal Values, Consumer Identities, and Attitudes toward Electric Cars among Egyptian Consumers. Business Ethics, the Environment & Responsibility.
[7] Polish Alternative Fuels Association. (2023). E-Mobility Index. https: //pspa.com.pl/home_en/?lang=en
[8] Scorrano, M., Mathisen, T. A., Danielis, R., Simsekoglu, O., & Marinelli, G. (2023). Car Choice Determinants in Italy and Norway: A Comparison Based on Revealed and Stated Choices. Research in Transportation Business & Management, 51, 101041.
[9] Li, W., Long, R., Chen, H., & Geng, J. (2017). A Review of Factors Influencing Consumer Intentions to Adopt Battery Electric Vehicles. Renewable and Sustainable Energy Reviews, 78, 318–328.
[10] Eurostat. (2024). Statistics. https: //ec.europa.eu/eurostat/databrowser/product/page/road_eqr_carpda__custom_10054540