Ivey | Publishing

W19506

NIO: DEVELOPING A BUSINESS MODEL IN CHINA

Professors Xiangyang Ma, Zeng Wang, Tieshan Li, Xianyi Li, and Xiaomei Li wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

By 2018, the "Internet plus" concept—cloud computing, the Internet of Things—had been popular in China for a few years.[1] Internet giants, such as Apple Inc., Google LLC, Baidu Inc., and Leshi Internet Information and Technology Corp. (LeEco), had joined the field of automobile research and development (R&D), and the term "Internet car"—connecting your phone and home to your car over WiFi—had become well-known to the general public. The auto industry, which had approached change the same way for more than a hundred years, had finally taken this opportunity to set off another level of change. In this high-tech car-making environment, NIO Inc., a global start-up with head offices in San Jose, London, and Shanghai, stood out from the rest.

On the morning of September 12, 2018, Bin Li, the founder of NIO, stood in the hall of the New York Stock Exchange, smiling broadly. Li did not ring the bell to start trading his company's shares but gave the opportunity to 12 NIO owner-users. Since the listing of Tesla Inc.'s stocks in 2010, NIO became the world's second pure electric vehicle company listed on the US exchange and the first on China's Shanghai Stock Exchange. Li, who created Bitauto Holdings Ltd. and Yixin Group Ltd., had also been inextricably linked with dozens of companies, including Mobike, Uxin Ltd., and others.

Tesla was founded in 2003 and launched in 2010, with a gap of seven years.[2] By contrast, NIO took only four years—2014 to 2018—from inception to launch as a start-up. However, Li had announced on many occasions that NIO was not the same as Tesla. He had specifically differentiated NIO from Tesla with a powerful statement that expressed the core belief of NIO: "Becoming the world's most user-satisfied company is more important than revenue." To achieve this great value proposal, Li needed to decide whether NIO should develop its own business model, and if so, how.

BACKGROUND ENVIRONMENT

As one of the seven emerging industries in China,[3] the new-energy automobile industry—designing and manufacturing plug-in electric vehicles—had received a great deal of attention from the Chinese government. China's new-energy automobile industry began to develop after 2001, when the government developed and implemented a national plan of nearly 100 policies in strategic investment, financial subsidies, tax reductions, regulations, and standards.

In 2009, the state developed its Automotive Industry Adjustment and Revitalization Plan and specifically allocated US$1.5 billion[4] in special funds to further support the development of the new-energy vehicle industry. The government also introduced a preferential subsidy policy for car purchases on new-energy vehicles to encourage people to buy them.[5]

In January 2018, a forum, titled "Grasp the Trend of Global Change and Achieve High-Quality Development," was held in Beijing to discuss the existing problems and future development trends of new-energy vehicles.[6] Although the concept of new-energy vehicles had been proposed much earlier, it had not been developed on a large scale because of technical and resource constraints. However, under the 2009 policy guidance, China's new-energy vehicles developed quickly from 2012 to 2017 and achieved considerable results.[7]

DEVELOPMENT AND LAUNCH OF NIO

Fund Development

Many car manufacturers had joined the inclusive and open new-energy vehicle market. NIO was positioned in a "dollar player's"[8] role in local level businesses and communities that were rarely involved in the financing strategies of new-energy car manufacturers. NIO was established as a start-up electric car company in December 2015 by Li, Qiangdong Liu, and Xiang Li, with funds from dozens of banks and investors (see Exhibit 1).

Talent Development

As a car company in the mobile Internet era, NIO's talent needs also reflected the company's values. From Bitauto to NIO, Li had always paid attention to the development of sponsored events for students, such as the first China Formula Student Car Competition (FSC). Bitauto and NIO jointly invested $3 million to set up the Automobile Care Fund to give continuous support to these events. Li described the reward for this time and capital investment as "We could get closer to college students."

The development of talent was a top priority at NIO. By 2017, less than two years after its establishment, NIO had developed R&D, design, production, service, and business organization bases in San Francisco, Munich, London, Shanghai, Beijing, Hong Kong, Nanjing, Hefei, and other locations, bringing together thousands of world-class industry talents within the automotive, software development, and user experience fields. As of September 2018, the company had more than 8,000 highly talented NIO employees from more than 40 countries.

Because NIO was solidly founded early, its recruitment was ahead of many new electric-car companies in China. NIO also had exceptional leadership from the start. Padmasree Warrior, former global chief of technology and development at Cisco Systems Inc. and chief technology officer at Motorola Inc., worked as NIO's chief development officer and North American chief executive officer (CEO). A number of experienced and successful executives also held important positions at NIO, including co-founder and president, Lihong Qin, who had been vice-president of sales at Chery Automobile Co. Ltd. and executive director and chief marketing officer at Longfor Properties Co. Ltd.; and co-founder and executive vice-president Xiancong Ren, who had been chairman and president of Fiat Chrysler Automobiles Co. Ltd. (China). Others in the group included Ganesh V. Lyer, former chief information officer at Tesla, and Wanli Zhong, former executive vice-president at JMC Projects India Ltd.

Value Concept

NIO was more than just a car company. By providing high-performance "smart" electric vehicles and the ultimate user experience, NIO showed its commitment to creating a pleasant lifestyle for its users and being the best user enterprise in the world.[9] The English brand name NIO represented a "new day" and expressed the vision of pursuing "a bright future and a blue sky." Li believed that,

> Electricity, intelligence, and networking are the future of automobiles. We recognize and will lead such technology trends. The automotive industry is undergoing profound changes. We believe that not only products and technologies need to be changed, but the direction of true change is how to touch the users. We will redefine all the processes in serving users, providing them with a full enjoyment experience beyond expectation.

Product Planning

On June 25, 2015, Li made his first public appearance as the founder of NIO, talking about company plans:

> Our first product will be a limited edition high-performance electric super-run [vehicle], with technical data such as 1,000 horsepower, 100-kilometer acceleration within three seconds, and performance against the standard Ferrari LaFerrari and McLaren P1. The car will be launched in the second half of 2016.[10]

The public's anticipation that NIO was going to make a supercar began at that time. Approximately a year later, the EP9 arrived as scheduled. During the Formula E electric motor race in Hong Kong, Li said that NIO's first pure electric supercar would be released in London on November 21, 2016, with a batch of six cars.[11] Bin Li's product plan had come to the end of its first stage. The goal of this stage was clear: the supercar was intended to build a high-end corporate image, establishing brand awareness before the mass production model would be released.

In March 2017, NIO released its first concept car, the EVE, to be listed for sale in 2020. This concept car represented NIO's vision for the future of the car—a comfortable moving space, a "car that knows you." The EVE was a self-driving mobile living space, designed with the concept of the car being a "second living room," allowing users to fully enjoy their free time on the road. Through its interactive technology, such as a panoramic cockpit and smart (interactive) holographic screen, the car achieved the integration of vehicle-and-environment together with people-and-environment. In this second phase of development, the EVE continued to build a high-end brand image.

In the third stage, NIO's first production model, the ES8 (see Exhibit 2) was launched. The ES8 was positioned in the fast-growing seven-seat SUV market for new generation nuclear families in first- and second-tier cities. Compared with standard cars, SUVs had better sales potential. The seven-seat SUV had a large in-car space that could offer more activity space for families. Its technology was easier to configure, which helped to enhance the user's experience. This was also in line with NIO's tenet of "creating a pleasant lifestyle for users and creating a future life experience."

On December 16, 2017, the first NIO Day was held at Wukesong Stadium in Beijing. The ES8 was officially launched, and reservations were taken. The first batch of 10,000 original models was scheduled to be sold out. Notably, the world's first in-vehicle artificial intelligence system was officially unveiled at this event with the introduction of NOMI AI.[12] Based on powerful in-vehicle computing capabilities and a cloud computing platform, the integrated voice interaction system and intelligent emotional engine[13] created a revolutionary way for people and vehicles to interact. For the first time, the car had been transformed from a mere machine into an emotional partner.

INNOVATIVE BUSINESS MODELS: NIO COMPARED WITH TESLA

Product

In general, in terms of product strategy, NIO and Tesla both used high-end products to build brand awareness and then brought mass-produced products to the market. As a technology-savvy, totally electric car, the Tesla vehicle had always appeared as a high-end car in the eyes of the public. For example, the Tesla Model S P85D provided an excellent driving experience, similar to Audi's S8 and Mercedes-Benz's S63/S65 (see Exhibit 2), but the quality and detail of the interior had some problems.[14] In a March 2017 report called "Beyond the Hype," J.D. Power found creak noises, scratches, and poor door alignment on the new Model S and Model X vehicles, issues that were attributed to the company's lack of manufacturing experience. The overall quality of Tesla vehicles, it concluded, was "not competitive" within the luxury segment, lacking "precision and attention to detail."[15]

The NIO ES8 was designed to meet the aesthetic and functional needs of a wider user base. Therefore, in addition to the design trend toward the mainstream, the vehicle also had some design aspects that addressed the user's practical needs. A calf support plate on the front passenger seat, space in front of the front passenger seat that could be used to place shoes and bags, and a storage compartment with a tilted angle at the centre armrest box had all been carefully designed for the user. To improve the texture of the ES8 interior, NIO had adopted a large-area Napa leather wrap design and used two different punching treatment schemes at the seat and backrest, which was equivalent to the current mainstream luxury car configuration. Although the cost was relatively high, the designs were necessary to meet and exceed users' needs and expectations.

Sales

NIO not only adopted Tesla's direct-marketing model[16] but also improved on it by focusing more on enhancing the users' purchase experience. NIO House was a notable alteration to the traditional marketing model: it bypassed the 4S (sales, spare parts, service, survey) stores and served consumers' needs through experience centers and networked direct sales, providing all services directly through the brand. NIO House was defined as a free-living space for car owners and their friends that provided customers with "a joyful lifestyle beyond the car." When the consumer arrived at NIO House, no salespeople were involved, and staff would guide the user around the offline lifestyle community.

On November 25, 2017, the first NIO House was officially opened in Beijing. Li defined NIO House when he explained, "What we want to create is not a simple place to show cars. We want to create a place for users to experience a welcoming atmosphere and freedom and make friends. Here, NIO will grow with the users."

After the Sale

Li, as the guiding founder, chairman, and CEO of NIO in China, had always stressed that NIO would be a 3.0 company: "The change in all industries is actually a change in the relationship between users and enterprises." His Enterprise 3.0 theory was born in 2012. In his view, "With the Internet as a time node, we can use three dimensions to redefine the car company. NIO's creation and development can be found in this theory."

Li's first theory dimension stated that companies that appeared before the Internet were called 1.0 companies. Most auto companies, such as Mercedes-Benz and BMW, were established before the advent

of the Internet, and they employed an industry chain that was divided into a wide range of separate functions. The services for users were completed by various dispersed entities, and there was no direct relationship between the users and the companies.[17]

His second dimension stated that companies emerging in the Internet era were called 2.0 companies. Tesla, established in 2003, was a 2.0 company. Tesla's "software-defined hardware" car-making ideas and direct-sales business model had dramatically altered the automotive industry, enabling users to communicate directly with car manufacturers and car brands.[18]

The third dimension stated that companies emerging in the mobile Internet era were called 3.0 companies. To be deemed as 3.0, a company needed to provide user experiences that went beyond expectations. In this era, the connection between enterprises and users was more essential, and this was the opportunity NIO recognized. The 3.0 business model, in Li's mind, needed to reshape the industrial chain after building a car to fully serve the needs of the users. Direct sales and after-market service were bundled together to enhance the user's experience and make him or her feel "cool." In other words, the automotive aftermarket, including charging, repair, maintenance, insurance, and other aspects, must be kept in the hands of NIO.

Based on cloud service and big data, NIO's Power connected charging piles, power stations, charging vehicles, batteries, the ES8, NIO specialists, and users into a smart-energy Internet that could achieve a "one click for power . . . worry-free energy package."[19] The same mobile Internet experience would also be applied to vehicle service. NIO's Service also connected the NIO House, Service Centers, Delivery Centers, service vehicle, ES8, NIO commissioner, and users into a smart-service Internet, making a "one click for service . . . worry-free service package" [20](see Exhibit 3).

Mobile Client and the NIO App

Li said in his comparative evaluation of Tesla and NIO,

> Tesla is undoubtedly a very ground-breaking company, but I think what we are pursuing is not quite the same as Tesla. Tesla may indeed pursue this so-called performance and so on. However, our attention to users, especially our attention to the whole user experience, is different from all other companies. So I think we are companies of different times because Tesla was established in 2003. From my point of view, its logic is still the thinking of the Internet instead of a mobile Internet thinking. If you go to see their application and our application, you will find that we are not a type of company. This is my concern, so I think the focus of our attention is not the same. Of course, once again, it is certainly a very great company.

NIO's exclusive app, which was open to registration for all downloaders, handled the car demands of owners and potential owners through the built-in application. It offered functions, including vehicle ordering, vehicle maintenance, configuring charging maps, displaying nearby "recharge stations" in real-time, and making appointments for charging piles and battery exchange services in advance, to solve the problem of power endurance.

In addition to basic car services, the NIO App tended toward an "information + social" mode: it focused on humanistic care of the owners and on user interaction. This app not only solved any daily car problems, but also established a "NIO Circle," that created a closed-loop ecological community belonging to NIO. Active users received rewards for accumulated points, and the "surprise" module—a new gameplay that awarded

points as gifts—had been launched, with the gifts to be issued on holidays. NIO also developed its own event reservation system on the app to provide offline and online activities for NIO App users across the country. As of June 30, 2018, 490,000 users had registered for the NIO App, and the monthly users were around 100,000.

STRATEGIC DECISIONS IN DEVELOPMENT

Co-Operation with JAC

At the beginning of its establishment, NIO did not choose to build its own factories as most new car companies had in the past. Instead, it chose to co-operate with an existing car factory, Anhui Jianghuai Automobile Group Corp., Ltd. (JAC), to address the production challenges of the ES8.

In April 2017, JAC and NIO officially signed a strategic co-operation framework agreement. The former was a 50-year-old independent car brand and the latter was an Internet car company that had existed for only a year. Outsiders had always referred to the co-operation between JAC and NIO as the OEM[21] model[22]; however, Qin believed that there was no OEM in the automotive industry. JAC had co-operated with NIO to establish a new, ultra-smart factory with a large number of robots.

Manufacturing companies in Changshu, Nanjing, and Kunshan supplied the core components of electric vehicles, including batteries, electric motors, and electronic control systems. The companies were all independently controlled by NIO. In the manufacturing process, NIO's co-operation required JAC to make an initial investment and build a four-process all-aluminum bodywork factory internally, which would be jointly managed by both parties. But because JAC's manufacturing level was relatively less efficient than more modern facilities and because there had been a recent decline in sales, consumers had certain concerns about product quality.

However, JAC was not NIO's only industry ally. On December 28, 2017, NIO announced that it had welcomed a new partner, GAC New Energy Automobile Co. Ltd. (GAC).[23] By this point, NIO had co-operated with three traditional auto companies: JAC, Chang'an Automobile Co. Ltd., and GAC. This co-operation was not simply for the OEM of traditional auto manufacturers; instead, it was to acquire the expertise to build the cars.

Charging Solutions Powered by the Mobile Internet: NIO Power

Charging was a topic that could not be avoided in any conversation about electric cars. Tesla had tried to use a fast-charging technology to make up for the problem of electric vehicle energy recharging[24]. At a press conference, Li proposed a battery-swap mode, which would replace the battery by exchanging a depleted battery for an already charged one. [25]Compared to fast-charging, the method of replacing the battery in three minutes was more efficient, and it was also more efficient than traditional refuelling because it took longer than three minutes for a user to fill up a tank with 50 litres of gasoline.

In December 2017, NIO Power—the world's first power service system—was put into service, making powering more convenient than fuelling. The ES8 was equipped with a replaceable power system that demonstrated that a battery swap could be completed within three minutes. At the same time, the integrated power supply solutions, such as Power Home (home chargers where practicable for users), Power Express (a network that provided users with 24-hour on-demand charging service, including car pick-up and drop-off), and Power Mobile (a car that served as a mobile power bank that could go to users) were unveiled. The Power Mobile could offer rapid charging within a 100-kilometre range in only 10 minutes. By 2020, NIO planned to build more than 1,100 power swaps across the country and simultaneously launch more than 1,200 Power Mobiles.

In fact, the battery-swap mode was not innovative. In 2008, the Israeli company Better Place turned this vision into a reality and replaced batteries in less than five minutes.[26] The company was sought after and attracted an investment of $1.25 billion in 2010.[27] Unfortunately, Better Place ultimately faced daunting obstacles and met with failure. Despite significant co-operation with the Renault–Nissan Alliance, the effect of battery swap in practical application proved to be unsatisfactory.[28] Renault CEO Carlos Ghosn publicly declared that "the power exchange mode has no future."[29] After the failure of Better Place, Tesla CEO Elon Musk announced that Tesla would implement a battery swap at the end of 2013; it introduced a 90-second battery change function in 2014. In the end, Tesla abandoned plans to implement this mode due to cost and other issues and, instead, turned to fast-charging technology and supercharger stations.[30]

Concerning NIO's plan for powering, Li said, "The solution is enabled by over 500 patented technologies. In 2018, we will invest about $300 million in this field to improve the user experience."

THE ROAD AHEAD FOR NIO

Policy Change

On February 13, 2018, China's Ministry of Finance and four other departments issued a policy to further increase the energy density threshold requirements for pure electric passenger vehicles and adjusted and optimized the subsidy standards for new-energy passenger vehicles.[31]

On June 28, 2018, China's National Development and Reform Commission and the Ministry of Commerce issued a statement that the auto industry should cancel the ratio of foreign-funded shares of special-purpose vehicles and new-energy vehicles and that the ratio of Chinese stocks in automobile manufacturing should be not less than 50 per cent. The statement also noted that the same foreign company could establish two or less of the same type of complete vehicle products in China and that, in 2020, the restrictions on foreign-funded shares of commercial vehicles would be abolished.[32]

Intense Competition

As of December 31, 2017, several domestic and foreign Internet companies and auto manufacturers had begun cross-border co-operation to explore Internet car manufacturing. In 2014, Google, General Motors Company, Honda Motor Company Ltd., Audi AG, Hyundai Motor Company, and other car manufacturers plus the video card manufacturer Nvidia Corporation established the Open Car Alliance, launched the Android car system, and installed the system in several manufacturers' cars.[33] Waymo LLC, a subsidiary of Google's Alphabet Inc., planned to commercialize a driverless car in early December 2018. [34]

Moreover, from 2014 to 2017, Alibaba Group Holding Ltd. had signed strategic co-operation agreements with Science Applications International Corporation (SAIC) and Chang'an Automobile to create an Internet car and an industrial ecosystem. SAIC's own brand, Roewe 550, had become the first Internet car to adopt Alibaba's Aliyun OS (AliOS) mobile operating system. Singulato, Guangzhou Xiaopeng Automotive Technology (Xiaopeng Motors), CHJAutomotive, WMMotor, and other new car companies had also started to invest, build factories, and launch Internet car products.[35]

The influx of many high-end players had made the new-energy market more competitive, often in a negative way. BAIC Group and BYD Auto Company Ltd. were the first local car companies to plan new-energy models. Years of careful planning had also brought about tremendous sales growth and had

already established their rank as the top two in global sales. Their large network of dealers and years of research on local consumers made the idea of overcoming the two top car companies not only a challenge for foreign investors, but also a tough job for new car companies.[36]

Profit Problem

By 2018, Tesla, the world's most successful and well-known electric car company, had been in business for 15 years. In 2017, it sold more than 100,000 cars and accumulated car sales of about $3 billion. Even so, the company had not yet achieved profitability in any given year.[37] In 2016, it launched its least expensive car, the Model 3, which was intended to quickly increase revenue and turn loss into profits through an affordable offering. However, it was precisely this car—which did not reach its expected output—that added to Tesla's growing problems.[38] Tesla's growth and development mainly depended on financing, but because of its failure to make profitability part of its cycle of development over 15 years, many investors had become concerned about the company's future.[39]

The development model of most domestic Internet and electric car manufacturers was similar to that of Tesla in that they also used financing to support their development. NIO had accumulated financing that exceeded $2.2 billion, and other new-energy car manufacturers had also received large amounts of financing. It seemed that the current domestic capital market had remained optimistic about the development of new-energy vehicles in China. As of August 2018, a total of 2,399 ES8s were produced, 1,602 vehicles were delivered, and about 15,000 orders were awaiting delivery.

Li's many public speeches revolved around the user experience without giving a clear picture of the company's profit model. Yet, in the market, traditional manufacturers were also accelerating development. NIO planned to make the manufacturing platform first, and then offer value-added services. The market prospects might have looked bright at that point, but there were also many problems: the company's independent production qualification was still lacking and its factory and mass-production capacity could not be established in the short-term (capital, supply-chain resources, etc.). Addressing these issues would require significant capital investment (see Exhibit 4 and Exhibit 5).

At the time, China's auto market was still growing, and many customers were ready to purchase cars for the first time. If the market accepted NIO's products and the sales volume was maintained at a good level, NIO could continue to address cost optimization and develop new products. If the subsequent services and development could not keep up, NIO could possibly be overtaken. After all, there were always more new models and brands in the market. Obviously, in the increasingly transparent and competitive car-making market, fighting its way to the top and continuing its successful marketing trend would prove to be the severest tests for NIO's business model and its future operation prospects.

EXHIBIT 1: NIO'S FINANCING PROCESS

Stage	Date	Investor	Amount (US$)
First round	2015-06-17	Tencent, Shunwei Fund, Jingdong Mall, Gaochun Capital, Bitauto	Undisclosed
Second round	2015-09-17	Sequoia Capital, Joy Capital	$500 million
Third round	2016-06-30	Temasek, TPG Growth, Hopu Fund, Lenovo Group	$100 million
Fourth round	2017-03-15	Tencent, Baidu, Huaping, IDG, Hopu Fund, Lenovo Group,	$600 million
Fifth round	2017-06-01	Guangji Capital, Baidu, Tencent, Huaping Investment, Gaochun Capital	Undisclosed
Sixth round	2017-11-08	Baillie Gifford, Lone Pine, CITIC Capital, Huaxia Fund	$1 billion
Total			**$2.2 billion**

Note: US$1=¥6.6171 on June 29, 2018.
Source: Company documents.

EXHIBIT 2: COMPARISON OF NIO AND OTHER BRAND SUVS

Manufacturer	**NIO-ES8**	**Tesla**	**Audi**	**Mercedes-Benz**	**SAIC Roewe**
Model	ES8	Model X 75D	Q7 45 e-tron [5]	AMG GLS63	ERX5
Type	BEV	BEV	PHEV (2.0 L)	ICE	BEV
Launch Date	2017	2016	2017	2017	2017
MSRP (¥) [1]	448,000 [6]	964,900	875,000	1,981,800	271,800
MSRP (US$) [1]	67,703	145,819	132,233	299,497	41,075
Average Consumer Cost (¥) [2]	373,933	1,048,081	875,000	2,157,390	197,733
Average Consumer Cost (US$) [2]	56,510	158,390	132,233	326,033	29,882
Length (mm)	5,022	5,037	5,071	5,162	4,554
Width (mm)	1,962	2,070	1,968	1,982	1,855
Height (mm)	1,756	1,684	1,716	1,851	1,716
Max No. of Seats	7	7	5	7	5
Electric Motor	AC	AC	Permanent magnet	N/A	Permanent magnet
	Asynchronous motor	Asynchronous motor	Synchronous motor		Synchronous motor
Horsepower (hp)	650	525	367	585	N/A
Acceleration Time from 0 to 100 km/h in seconds	4	5.2	5.9	5	7.8
Top Speed (km/h)	200	210	228	250	135
Battery Capacity (kWh)	70	75	17.3	N/A	48
Maximum Torque (Nm)	840	660	700	760	255
Maximum Power (kw)	480	386	270	430	85
NEDC Driving Range (km)	355	406	56 [3]	N/A	320
Charging Time	10 hrs (AC Charging)	8 hrs (AC Charging)	10.8 hrs (AC Charging)	N/A	7 hrs (AC Charging)
	1.1 hrs (DC Charging)	75 min (DC Charging)	2.5 hrs (DC Charging)		40 min to 80% (DC Charging)
Electricity Consumption (kWh/km)	0	0.22	0.31 [4]	N/A	0.18
Battery Swap Service	✓	×	×	×	×
Autonomous Driving	Level 2+	Level 2+	Level 2	Level 2	Level 1

Note: (1) Customs duty calculated as ex-factory price × 15%. On June 15, 2018, the Chinese government announced that an increase of 25% customs duty would be applied to vehicles imported from the United States, effective July 6, 2018 (calculated as ex-factory price × (15% + 25%)). (2) Average consumer cost for buyers in Beijing, Shanghai, Guangzhou, and Shenzhen. (3) At electric-only mode. (4) Estimated by dividing the power capacity by the NEDC (new European driving cycle) driving range at electric-only mode. (5) Because the Audi Q7 45 e-tron is only produced in Europe, such a tariff change has no impact on its price. It is subject to customs duty of 15%. (6) The original price of NIO ES8 was ¥548,000. After the national and local new-energy subsidies and the reduction of the purchase tax policy, the price was ¥448,000. ¥ = CNY = Chinese yuan renminbi; US$1=¥6.6171 on June 29, 2018. AC = alternating current; BEV = battery electric vehicle; ICE = internal combustion engine; km = kilometre; kWh = kilowatt hours; L = litre; MSRP = manufacturer's suggested retail price; mm = millimetre; Nm = Newton metre; PHEV = plug-in hybrid electric vehicle.
Source: Company documents.

EXHIBIT 3: NIO'S AFTER-SALES SERVICE

After-Sales Service	Price	Content
Ownership Benefits: Energy	Free	• Lifetime free quality assurance (no time or mileage limits) • Lifetime free roadside assistance (no time or mileage limits) • Lifetime free car connectivity services (8 GB cellular data per month)
Worry-Free Energy Package	¥10,800 ($1,632)/year or ¥980 ($148)/month	• One click for power (15 times/month) • Free power supply quota (1000 kWh/month) • Battery upgrades, etc.
Ownership Benefits: Service	Free	• Lifetime free nationwide charging services • Up to two times monthly Up to 12 times annually
Worry-Free Service Package	¥14,800 ($2,237)/year	• Door-to-door pickup and delivery (no usage limits) • Valet repair and maintenance services (no usage limits) • Free repairs within the plan's duration (with disclaimer) • Free maintenance within 60,000 km and plan's duration • If vehicle repairs, maintenance, or delivery cannot be completed within 24 hours, free courtesy car will be provided • Free cellular data boost of up to 15 GB per month, etc.

Note: ¥ = CNY = Chinese yuan renminbi; dollar amounts are in US$; US$1=¥6.6171 on June 29, 2018; GB = gigabytes; km = kilometres; kWH = kilowatt hours.
Source: Company documents.

EXHIBIT 4: NIO'S PARTIAL CONSOLIDATED FINANCIAL DATA

(a) Summary Consolidated Statements of Comprehensive Loss

	Year Ending December 31			Six Months Ending June 30		
	2016	2017		2017	2018	
in '000s, except for shares and per share data	CNY	CNY	US$	CNY	CNY	US$
Revenue						
Vehicle sales					44,399	6,710
Other sales					1,592	241
Total revenues					45,991	6,951
Cost of sales						
Vehicle sales					(185,531)	(28,038)
Other sales					(13,648)	(2,063)
Total cost of sales					(199,179)	(30,101)
Gross loss					**(153,188)**	**(23,150)**
Operating expenses [(1)]						
Research and development [(1)]	(1,465,353)	(2,602,889)	(393,358)	(1,031,253)	(1,459,344)	(220,541)
Selling, general, and administrative expenses [(1)]	(1,137,187)	(2,350,707)	(355,247)	(964,363)	(1,726,297)	(260,884)
Total operating expenses	(2,602,540)	(4,953,596)	(748,605)	(1,995,616)	(3,185,641)	(481,425)
Loss from operations	(2,602,540)	(4,953,596)	(748,605)	(1,995,616)	(3,338,829)	(504,575)
Interest income	27,556	18,970	2,867	4,730	49,565	7,490
Interest expenses	(55)	(18,084)	(2,733)	(12,681)	(19,642)	(2,968)
Share of losses of equity investee		(5,375)	(812)	(2,986)	(7,358)	(1,112)
Investment income	2,670	3,498	529	1,991		
Other income (loss), net	3,429	(58,681)	(8,869)	(11,635)	(4,897)	(740)
Loss before income tax expense	(2,568,940)	(5,013,268)	(757,623)	(2,016,197)	(3,321,161)	(501,905)
Income tax expense	(4,314)	(7,906)	(1,195)	(4,325)	(4,368)	(660)
Net loss	(2,573,254)	(5,021,174)	(758,818)	(2,020,522)	(3,325,529)	(502,565)

EXHIBIT 4: CONTINUED

(b) Share-Based Compensation Allocation in Operating Expenses

	Year Ending December 31			Six Months Ending June 30		
	2016	2017		2017	2018	
in '000s	CNY	CNY	US$	CNY	CNY	US$
Research and development expenses	14,484	23,210	3,508	10,900	12,418	1,877
Selling, general, and administrative expenses	62,200	67,086	10,138	24,938	93,146	14,076
Total	76,684	90,296	13,646	35,838	105,564	15,953

(c) Selected Consolidated Balance Sheet Data

	as of December 31			as of June 30		
in '000s except for shares and per share data	2016	2017		2018		
				Actual		Pro Forma (1)
	CNY	CNY	US$	CNY	US$	CNY
Cash and cash equivalents	581,296	7,505,954	1,134,327	4,423,234	668,455	4,423,234
Restricted cash		10,606	1,603	20,092	3,036	20,092
Property, plant, and equipment, net	833,004	1,911,013	288,799	3,189,004	481,934	3,189,004
Total assets	1,770,478	10,468,034	1,581,967	10,276,097	1,552,960	10,276,097
Total liabilities	825,264	2,402,028	363,004	4,433,062	669,939	4,234,268

Note: (1) The consolidated balance sheet data as of June 30, 2018 are adjusted on a pro forma basis to give effect to the automatic conversion of all outstanding ordinary shares and preferred shares into 851,041,978 ordinary shares immediately prior to the completion of this offering; CNY = Chinese yuan renminbi; US$1 = ￥6.6171 on June 29, 2018.
Source: Company documents.

EXHIBIT 5: NIO AND TESLA—LISTED BACKGROUND COMPARISON

	NIO	Tesla
Market Value	NIO was listed at the bottom of the company's target price range of $6.25–$8.25 per share. With a total of 160 million ADS (American Depositary Shares) calculations and a maximum over-allotment of 24 million shares, NIO's maximum amount of financing was $1.2 billion. Based on this price, the market value of NIO closed at $6.7 billion.	Tesla was listed on the American Stock Exchange in June 2010 and issued 13.3 million shares at a price of $17.00 per share. After the close on July 27, 2018, Tesla was valued at $297.18 per share. Tesla's valuation before the listing was only $2.2 billion; Tesla's market value is $50.696 billion on June 29, 2018.
Listing Background: Sales	From June to August, 2018, NIO produced 272 vehicles, 831 vehicles, and 1,097 vehicles each month, respectively. A total of 2,200 vehicles were produced and a total of 1,381 vehicles were delivered.	Prior to the listing of Tesla, public data showed that the Tesla Roadster models had sold a total of 1,500 units in 2010.
Listing Background: Orders	As of August 28, 2018, NIO had produced a total of 2,200 ES8s and had already delivered 1,381 units; 15,000 orders were yet to be delivered. Among them, 9,497 were "small orders" with deposits of $745 that could be refunded at any time.	The Tesla Model S and Model X models sold a total of 44,134 units in the first half of 2018. Model 3 received about 325,000 orders during the first week after the opening of orders.
Listing Background: Investment Amount	Prior to the listing, NIO had a total financing of approximately $2.2 billion through six rounds of equity financing.	From the establishment of Tesla to the listing, the total investment and financing was about $660 million.
Loss	A total loss of $1.65 billion before the listing.	Tesla's consecutive losses in 14 years totalled more than $6 billion.

Note: All dollar amounts are in USD; US$1=¥6.6171 on June 29,2018.
Source: Tesla Inc., Form 10-K for the Fiscal Year Ending December 31, 2018, Last10-K.com, February 19, 2019, accessed May 17, 2019, https://last10k.com/sec-filings/tsla; Zacks, "Tesla (TSLA) Model 3 Achieves 325K Reservations in a Week," Yahoo Finance, April 9, 2016, accessed January 23, 2019, https://finance.yahoo.com/news/tesla-tsla-model-3-achieves-190007631.html; Tesla Inc., Prospectus [Rule 424(b)(4)], U.S. Securities and Exchange Commission, June 29, 2010, accessed May 25, 2019, www.sec.gov/Archives/edgar/data/1318605/000119312510149105/d424b4.htm.

ENDNOTES

[1] Gu Liping, "'Internet Plus' to fuel innovation, development," Ecns.cn, March 06, 2015, accessed September 11,2019, http://www.ecns.cn/business/2015/03-06/156995.shtml.
[2] "Tesla Inc. Prospectus [Rule 424(b)(4)]," U.S. Securities and Exchange Commission, June 29, 2010, accessed May 25, 2019 www.sec.gov/Archives/edgar/data/1318605/000119312510149105/d424b4.htm; and Sayan Chatterjee and Dennis Terez, *Tesla: Testing a Business Model at Its (R)Evolutionary Best* (London, ON: Ivey Publishing, 2018), 1. Available from Ivey Publishing, product no. 9B18M033.
[3] Swissnex, "China's 7 Strategic Emerging Industries," Swissnex China, October 28, 2013, accessed May 16, 2019, www.blog.swissnexchina.org/innovation/2013/10/27/chinas-7-strategic-emerging-industries.
[4] US$1 = ￥6.6171 on June 29, 2018. All $ amounts are in US$ unless otherwise indicated.
[5] Office of the State Council, "Automotive Industry Adjustment and Revitalization Plan," Chinese Government Network, March 20, 2009, accessed March 29, 2019, www.gov.cn/zwgk/2009-03/20/content_1264324.htm.
[6] Muping Liu, "Heyi Xu: The Development of New Energy Vehicles Is a Profound Change in the Automobile Industry, " Xinhua, January 20, 2018, accessed May 25, 2019, www.xinhuanet.com/auto/2018-01/20/c_1122289093.htm.
[7] Mingyang Li and Lingzhi Li, "Sustainable Development of New Energy Vehicle Industry in China," *AIP Conference Proceedings* 1944 (2018), doi:10.1063/1.5029739.
[8] Being positioned in a "dollar player's" role meant that NIO was good at financing in the capital market.
[9] "Investor Relations," NIO, accessed August 27, 2019, https://ir.nio.com/.
[10] Xinxin Li, "Bin Li: You have never seen a real NIO," Auto sina, Oct 13, 2016, accessed August 27,2019, http://auto.sina.com.cn/news/hy/2016-10-13/detail-ifxwvpar7973376.shtml.
[11] "NextEV Global Launch of Brand and Supercar Set for November 21," NIO, Nov 09, 2016, accessed August 27,2019, www.nio.com/news/nextev-global-launch-brand-and-supercar-set-november-21
[12] "NIO Launches ES8 SUV with New User Experience," NIO, Jan 12, 2018, accessed August 27,2019, www.nio.com/news/nio-launches-es8-suv-new-user-experience.
[13] Lucia Komljen, "Discovering Emotional Engines," Medium, November 30, 2017, accessed May 17, 2019, https://medium.com/@luciak/discovering-emotional-engines-d8ae62efd61a.
[14] Chris Bruce, "Consumer Reports Finds Poor Reliability for Tesla Model S," Autoblog, October 21, 2015, accessed April 26, 2019, www.autoblog.com/2015/10/21/tesla-model-s-consumer-reports-poor-reliability.
[15] Reuters, "Build Fast, Fix Later: Speed Hurts Quality at Tesla, Workers Say," November 29, 2017, accessed April 26, 2019, www.autoblog.com/2017/11/29/build-fast-fix-later-speed-hurts-quality-at-tesla-workers-say.
[16] Trefis Team and Great Speculations, "Is the Direct Sales Model Critical for Tesla Motors?," *Forbes*, March 3, 2016, accessed May 17, 2019, www.forbes.com/sites/greatspeculations/2016/03/03/is-the-direct-sales-model-critical-for-tesla-motors/#76229e0723b3.
[17] Chao Yu, "Bin Li: NIO is a 3.0 company," Car consumption network, Nov 14, 2016, accessed Sep 12, 2019, http://inf.315che.com/n/2016_11/754421
[18] Bin Li (founder and CEO, NIO), in discussion with the case author, on October 10, 2018.
[19] "NIO Power," NIO, accessed August 27,2019, www.nio.cn/nio-power.
[20] "NIO Service," NIO, accessed August 27,2019, www.nio.cn/nio-service.
[21] OEM (original equipment manufacturer) referred to the manufacturer's production according to the requirements and authorization of the original factory. All design drawings were manufactured in accordance with the design of the upstream manufacturer.
[22] Yan Li, "Nio and Tesla go head-to-head," Global Times, Dec 26, 2017, accessed August 27, 2019, www.ecns.cn/business/2017-12-26/detail-ifytetzm3001060.shtml.
[23] Hao Yan, "Nio, GAC set up joint venture to develop smart car business," China Daily, Dec 29, 2017, accessed August 27,2019, http://www.chinadaily.com.cn/regional/2017-12/29/content_35406068.htm.
[24] JIM RESNICK, "Technology of the Year: Tesla Supercharger Network. Elon Musk's vision of coast-to-coast EV driving is taking hold," Autoblog: New Cars, Used Cars for Sale, Car Reviews and News, Nov 19, 2013, accessed August 27, 2019, www.autoblog.com/2013/11/19/technology-of-the-year-tesla-supercharger-network/.
[25] "NIO Launches ES8 SUV with New User Experience," NIO, Jan 12, 2018, accessed August 27, 2019, www.nio.com/news/nio-launches-es8-suv-new-user-experience.
[26] Flie Ofek and Alison Berkley Wagonfeld, *Speeding Ahead to a Better Place* (Boston, MA: Harvard Business School Publishing, 2012), 5. Available from Ivey Publishing, product no. 512056.
[27] Sam Abuelsamid, "Better Place Raises Another $350m in Series B Venture Funding," Autoblog, January 25, 2010, accessed April 26, 2019, www.autoblog.com/2010/01/25/better-place-raises-another-350m-in-series-b-venture-funding.
[28] Edmund Sanders, "Israeli Electric Car Start-Up Better Place Files for Bankruptcy," *Los Angeles Times*, May 26, 2013, accessed August 21, 2019, www.latimes.com/world/la-xpm-2013-may-26-la-fg-wn-israel-electric-car-bankruptcy-20130526-story.html.
[29] Danny King, "Carlos Ghosn Says No More Battery Swap Cars," Autoblog, May 3, 2013, accessed April 26, 2019, www.autoblog.com/2013/05/03/carlos-ghosn-says-no-more-battery-swap-cars.
[30] Christopher Williams, Umair Shafique, Adnan Kayssi, and Wanyi Zhao, *Tesla: Internationalization from Singapore to China* (London, ON: Ivey Publishing, 2015), 5. Available from Ivey Publishing, product no. 9B15M074; Danny King, "Did Tesla Shut down Its Battery-Swapping Pilot Program?," Autoblog, November 8, 2016, accessed April 26, 2019, www.autoblog.com/2016/11/08/tesla-

shut-down-battery-swapping-program; Daniel Cooper, “Tesla Won't Build More Battery Swap Stations,” Engadget, October 15, 2016, accessed April 26, 2019, www.engadget.com/2015/06/10/tesla-battery-swap.

[31] Instrumentalities of the State Council,All Ministries,Ministry of Finance, Ministry of Industry & Information Technology, Ministry of Science & Technology, All Commissions, State Development & Reform Commission, “Notice of the Ministry of Finance, the Ministry of Industry and Information Technology, the Ministry of Science and Technology, and the National Development and Reform Commission on Further Improving the Fiscal Subsidy Policies for the Promotion and Application of New Energy Vehicles,” Ministry of Finance of the People's Republic of China, Mar 26, 2019, accessed August 27, 2019, http://en.pkulaw.cn/display.aspx?id=d2d036be4628023fbdfb&lib=law&SearchKeyword=&SearchCKeyword=%b9%d8%d3%da%bd%f8%d2%bb%b2%bd%cd%ea%c9%c6%d0%c2%c4%dc%d4%b4%c6%fb%b3%b5%cd%c6%b9%e3%d3%a6%d3%c3%b2%c6%d5%fe%b2%b9%cc%f9%d5%fe%b2%df%b5%c4%cd%a8%d6%aa.

[32] Instrumentalities of the State Council, All Commissions,State Development & Reform Commission (incl. former State Development Planning Commission), All Ministries, Ministry of Commerce, “Special Administrative Measures (Negative List) for the Access of Foreign Investment (2018),” State Development & Reform Commission (incl. former State Development Planning Commission), Ministry of Commerce, July 28, 2018, accessed August 27,2019, http://en.pkulaw.cn/display.aspx?id=5f03ff0c5803b362bdfb&lib=law&SearchKeyword=&SearchCKeyword=%cd%e2%c9%cc%cd%b6%d7%ca%d7%bc%c8%eb%cc%d8%b1%f0%b9%dc%c0%ed%b4%eb%ca%a9.

[33] Natasha Lomas, “Google Announces Open Automotive Alliance To Drive Android Into Connected Cars,” TechCrunch, Jan 6, 2014, https://techcrunch.com/2014/01/06/oaa/.

[34] Sven Gustafson, “Report: Waymo to start driverless ride-hailing program in December,” Autoblog: New Cars, Used Cars for Sale, Car Reviews and News, Nov 13, 2018, accessed August 27,2019, www.autoblog.com/2018/11/13/waymo-phoenix-ride-hailing/.

[35] Gerard Lye, "Roewe RX5 unveiled – “internet car” with Alibaba OS,” paultan.org, July 8, 2016, accessed Sep 11,2019, http://paultan.org/2016/07/08/alibaba-oscar-rx5-companys-first-internet-car/.

[36] “Rivian joins long line of startups, old-line automakers aiming for Tesla,” Autoblog: New Cars, Used Cars for Sale, Car Reviews and News, October 26, 2018, accessed Sep 12, 2019, www.autoblog.com/2018/11/26/rivian-joins-long-line-of-startups-old-line-automakers-aiming-f/

[37] Tesla Inc., Form 10-K for the Fiscal Year Ending December 31, 2018, Last10-K.com, February 19, 2019, accessed May 17, 2019, https://last10k.com/sec-filings/tsla.

[38] Alex Davies, “Elon Musk Is Broken, and We Have Broken Him,” *Wired*, August 18, 2018, accessed May 25, 2019, www.wired.com/story/elon-musk-tesla-tweets-struggles.

[39] Hallie Detrick, “Tesla Is Burning $6,500 Every Minute. It's Probably Going to Need to Raise a Lot More,” Fortune, April 30, 2018, accessed May 25, 2019.