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LUXURY VEHICLE MARKET TO SEE RAPID GROWTH

Global luxury vehicle market outlook

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The global pandemic has resulted in many far-reaching consequences, including disrupted supply chains and inflation, that have reshaped the global consumer and retail market. With rising health and safety concerns, customer behavior has also transformed dramatically. Additionally, with more and more High-Net-Worth Individuals (HNWIs) worldwide despite the effects of the pandemic, the global luxury market has outperformed the rest of the consumer and retail market with robust growth.

In this evolving environment, the luxury vehicle market, considered to be among the class of most valuable and durable luxury goods, is expected to grab market share from the non-luxury vehicle market in the coming decade. In fact, with the rising popularity of electrification and many other trends, it is expected to enjoy annual growth rates in the double digits.

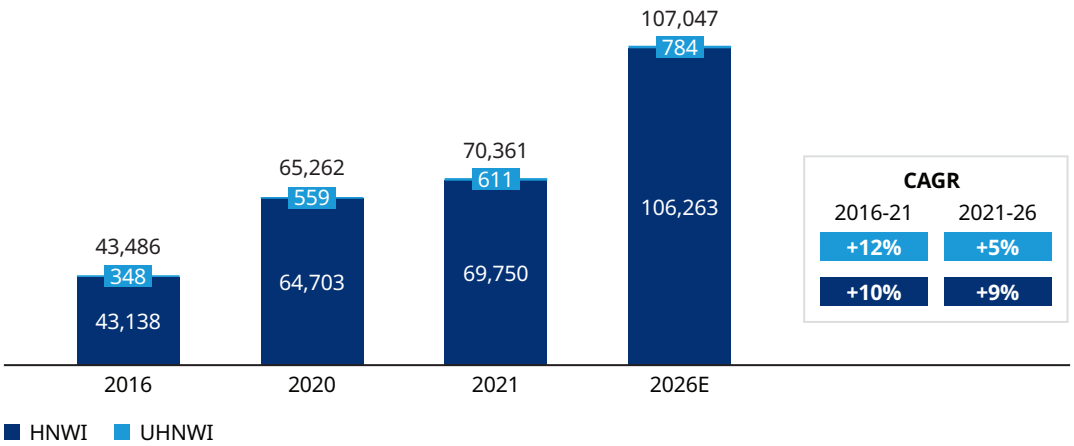
GLOBAL LUXURY MARKET POISED FOR GROWTH

The global luxury market includes several segments, including experiential luxury, fine wines and spirits, luxury cars, and personal luxury goods. The global luxury market is recovering from the global pandemic and showing strong growth momentum. It is expected to have achieved a growth rate of 9% in 2022, reaching approximately €1.2 trillion, from about €1.1 trillion in 2021. The promising market performance has been largely driven by the expanding base of HNWIs (individuals with a net worth of $1 million or more, including their primary residence), the release of consumption power in new markets, the diversification of participants in the luxury goods market, the stimulus seen from sustainability, the pivot to enhance channel experiences, and the investment boost witnessed in the luxury industry.

INCREASING NUMBER OF HNWIs GLOBALLY

According to the Knight Frank World Wealth Report 2022, the global number of HNWIs has reached 70 million in total and is expected to exceed 100 million by 2026. Additionally, the number of Ultra-High-Net-Worth Individuals (UHNWIs, who have a net worth of $30 million or more, including their primary residence) is expected to have a compound annual growth rate (CAGR) of greater than 5% from 600,000 in 2021 to over 780,000 in 2026. These two affluent groups account for most of the world's wealth and have tremendous spending power. Their continued expansion will undoubtedly further promote the development of the luxury market.

Exhibit 1: Global HNWI and UHNWI populations
In thousands



Source: Knight Frank World Wealth Report 2022, Oliver Wyman analysis

BOOMING CONSUMPTION POWER IN NEW MARKETS

The US and Europe remain strong markets for luxury goods, but the emerging markets, particularly China, are reshaping the industry. During the pandemic, China's personal luxury goods segment realized a CAGR of 21% from 2020 to 2022, according to Frost & Sullivan. It is expected to be the largest personal luxury goods market in the near future. Beyond China, various key markets and regions, such as South Korea, Southeast Asia, and India, are also showing significant potential.

NEW TYPES OF LUXURY GOODS CUSTOMERS

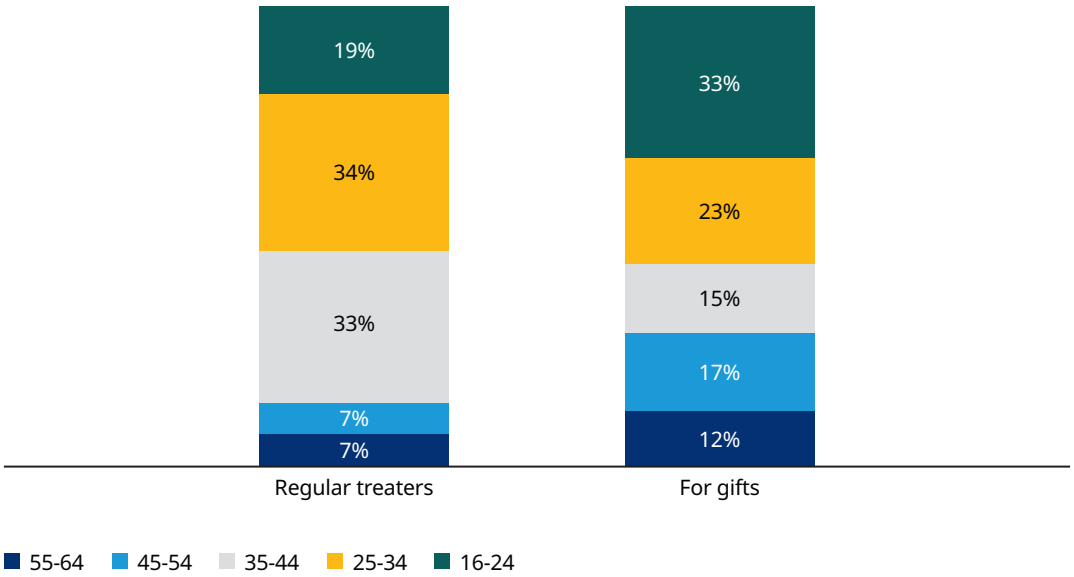
The increasing participation of the younger generation and female customers is fueling the demand for luxury goods. Their consumption preferences are also propelling the transformation of the market, thus creating new opportunities and challenges for market players.

Increasing participation of the younger generation

The younger generation, namely millennials and Generation Z (Gen Z), are becoming the growth engine of the luxury industry. Globally, over 50% of regular luxury buyers are under the age of 35, and for gifting occasions, the youngest age group shows the highest willingness to buy luxury items, according to Global Web Index March 2019.

Exhibit 2: Age breakdown of global luxury buyers

Question: "Do you ever purchase high-end or luxury products / services?"

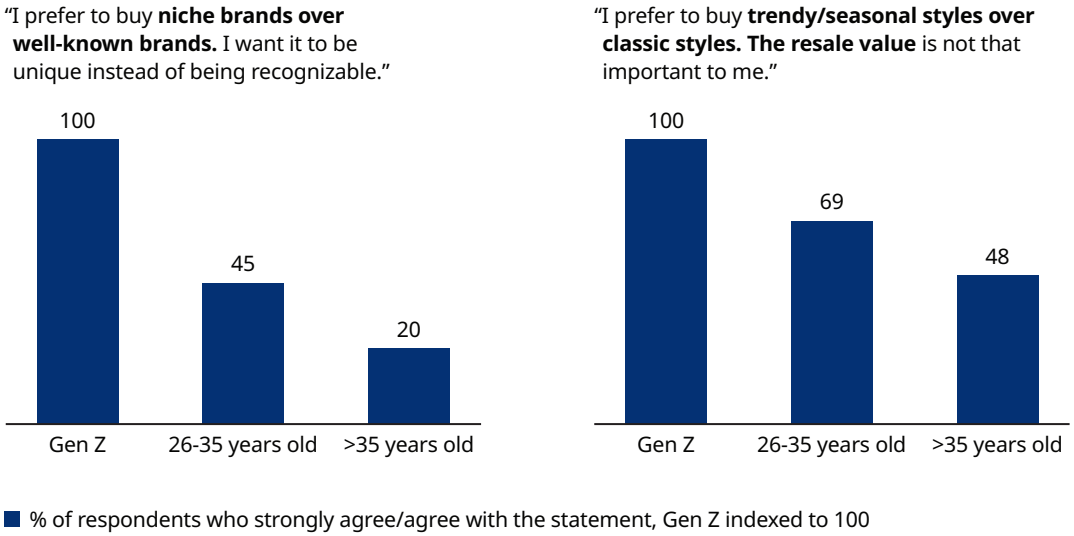


N=2756, % who say they mainly purchase luxury items/services

Source: Global Web Index March 2019, Oliver Wyman analysis

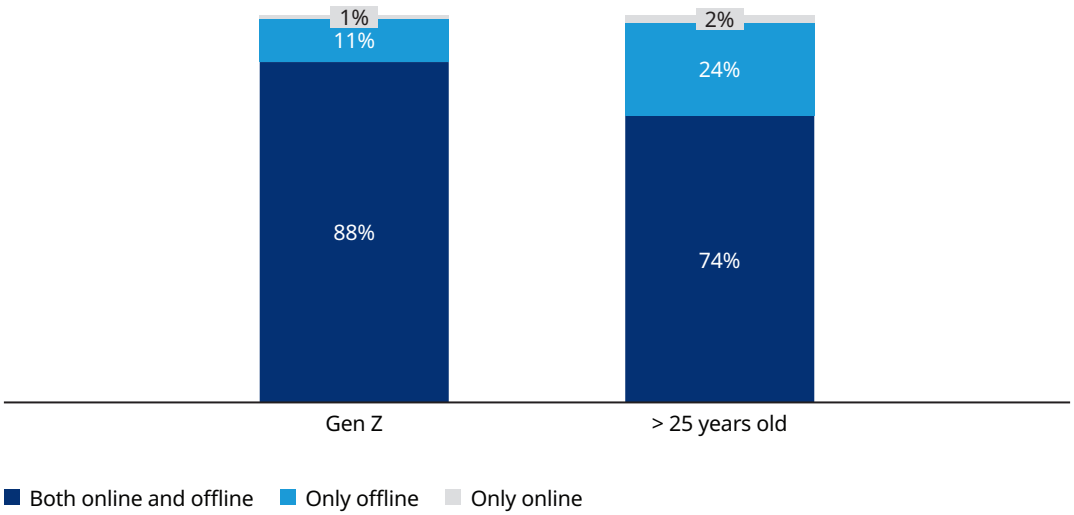
A recent Oliver Wyman research report has found that half of all the Chinese consumers of luxury goods only entered the market in the past 12 months. Among these new customers, 40% are under the age of 25. Millennials and Gen Z tend to buy luxury items more frequently to reward themselves and are willing to spend more of their disposable income on luxury goods. Gen Z luxury consumers prefer niche brands over well-known ones, and they are more attracted to trendy styles over classic ones. Even though younger luxury consumers are digital natives and have a greater tendency to make online purchases, the in-store experience for buying luxury items is still very important to them.

Exhibit 3: Preferences of Chinese luxury spenders towards brands and styles



Source: Oliver Wyman Luxury Consumer Survey, Oliver Wyman analysis

Exhibit 4: Purchase channel of luxury goods for consumers by type



Source: Oliver Wyman Luxury Consumer Survey, Oliver Wyman analysis

Greater purchasing power of females

"She Power" is becoming more and more significant in the economy. Females accounted for over $31.8 trillion in worldwide consumer spending in 2019, and globally, 89% of females reported being in charge of or sharing daily shopping needs, compared to only 41% of males, according to research conducted by Catalyst in 2020. The active participation in purchasing among females has helped the luxury market grow, leading to more designs and marketing that appeal to females in the luxury industry.

Female consumers are also becoming increasingly involved in the vehicle market. According to an American survey, females make 65% of all new car purchase decisions. A survey in China showed that females had outpaced males in car spending in 2020. Moreover, in the luxury vehicle segment, females are responsible for a significant share of purchases. A luxury carmaker claimed that female customers purchased 20% of its new cars in China in 2021.

NEW STIMULUS FROM SUSTAINABILITY

In response to rising environmental concerns, the luxury industry is adapting its design, production, and marketing methods for its goods and services to satisfy its customers' needs. The evolvement of values and lifestyles has created new demands in the market. Items created using recyclable materials or those responsible for lower carbon emissions are increasingly catching the customer's eye. Therefore, luxury companies, from fashion to automobiles, are attaching higher importance to sustainability. A number of automobile companies have announced ESG timelines, such as achieving carbon neutrality by 2035, together with sustainability initiatives.

PIVOT TO ENHANCE CHANNEL EXPERIENCES

The luxury sales channel has changed dramatically in the past decade, helping promote the growth of the luxury market. The most noteworthy new channel, e-commerce, has demonstrated a CAGR of about 26% in the personal luxury goods sector from 2010 to 2019, according to the Business of Fashion. The surprising growth mainly comes from the significant improvement in customer experiences, which have been supported by new technologies in particular. For example, the big data analytics used in e-commerce recommendation systems accurately capture consumer preferences, thus improving conversion rates. When it comes to offline stores, emerging technologies also help to improve in-store experiences by making them more enjoyable. A luxury fashion brand has leveraged augmented reality technology to enhance the shopping experience in one of its flagship stores through VR gadgets. As a result, consumers are able to customize and see the products, such as tote bags or sneakers, in a real-world setting by simply pointing a tablet or phone's camera at the various in-store products.

INVESTMENT BOOST IN THE LUXURY INDUSTRY

As has happened in other markets, investment has become another boost for the luxury market, providing new growth horizons to both established and emerging companies. Greater investment and mergers and acquisitions have helped provide stablished companies with additional resources for various actions, including new market entries, new channel development, campaigns for brands to be refreshed, and new product launches. An iconic French luxury brand has been successfully revived after its acquisition by a Chinese company. The brand's business has been expanded into North America and China via the acquisition, thanks to the introduction of new retail network partners, the empowerment of the brand's digital marketing capabilities, and the building of its talent teams. As a result, the brand has doubled its annual revenue in the new markets. Greater investment has also helped incubate new brands. For instance, an international luxury conglomerate has established a number of luxury ventures to invest in promising new brands to amplify its overall brand portfolio.

LUXURY VEHICLE MARKET NEARLY EQUALS ALL OTHER LUXURY SEGMENTS COMBINED

The luxury vehicle market is the largest segment of the overall luxury market. This report regards the Manufacturer's Suggested Retail Price (MSRP) of $80,000, based on the MSRP in local markets, as the threshold for luxury and ultra-luxury automotive vehicles. According to industrial practices, a luxury or ultra-luxury vehicle is usually characterized by its high comfort and safety level, advanced driving performance, stylish design, and exclusive experience.

Based on this definition, there were about 1.6 million luxury and ultra-luxury cars sold in 2021, equating to about 2% of the 80 million passenger cars sold worldwide that year.

LUXURY AND ULTRA-LUXURY SEGMENTATION, BY PRICE BAND

The total passenger vehicle market is expected to grow moderately at a CAGR of 3% from 2021 to 2031. However, the market for luxury and ultra-luxury vehicles is expected to grow at a much faster CAGR of 10% over the same period.

This promising high-growth forecast will be mainly driven by customer demand, supply proliferation, and favorable policy. The distinctive features of luxury and ultra-luxury vehicles, including high performance, aesthetics, exclusivity, and brand heritage, are expected to be further appreciated by affluent customers in the coming years.

Based on the MSRP range of the various brands' major car models, the market can be further divided into the luxury and ultra-luxury segments with an MSRP of $300,000 as the minimum threshold for ultra-luxury brands, normally defined by their long history and legendary brand heritage.

- **Luxury segment ($80,000-$299,000 MSRP):** high CAGR expected at about 10% until 2031, benefiting more from trade-up consumption activity. Currently, with a total sales volume of 1.57 million units, the total volume is expected to exceed 4 million units in 2031.
- **Ultra-luxury segment (more than $300,000 MSRP):** a niche market segment with a similar CAGR expected at about 10% until 2031. Within the segment, vehicles with an MSRP greater than $500,000 are expected to enjoy an even higher CAGR of about 14%. The increasing number of HNWIs and UHNWIs, and the diversification of vehicle models (including upcoming fully and partially electric vehicles, or EVs) will together help propel market growth. Currently, with a total sales volume of about 25,000 units, the total volume is expected to exceed 66,000 units in 2031.

Exhibit 5: Global luxury and ultra-luxury vehicle sales volume by price band

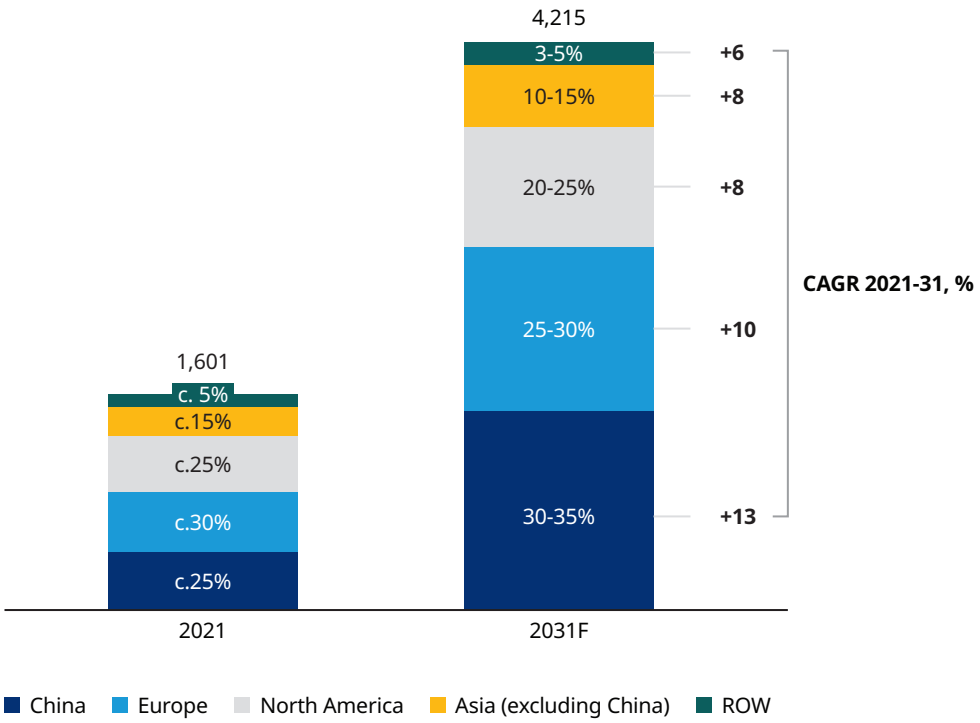
	Luxury		Ultra-luxury	
	$80k-$149k	$150k-$299k	$300k-$500k	> $500k
Sales volume (2021, k)	1,413	163	22	2.4
Sales volume (2031E, k)	3,664	485	57	8.8
CAGR (2021-31, %)	10	11.5	10	14

Source: Oliver Wyman analysis

CHINA AS THE ENGINE OF LUXURY VEHICLE GROWTH

Geographically, China and Europe play critical roles in the luxury and ultra-luxury vehicle market, having respective volume shares of about 25% and 30% in 2021. In addition, China is expected to be the fastest-growing market for luxury and ultra-luxury vehicles by 2031, with an expected CAGR of about 13% thanks to the country's tremendous HNWI growth and trade-up consumption activity. As such, China's share of this market's global volume is expected to reach 30-35% in 2031.

Exhibit 6: Luxury and ultra-luxury vehicle sales volume by geography
In thousands

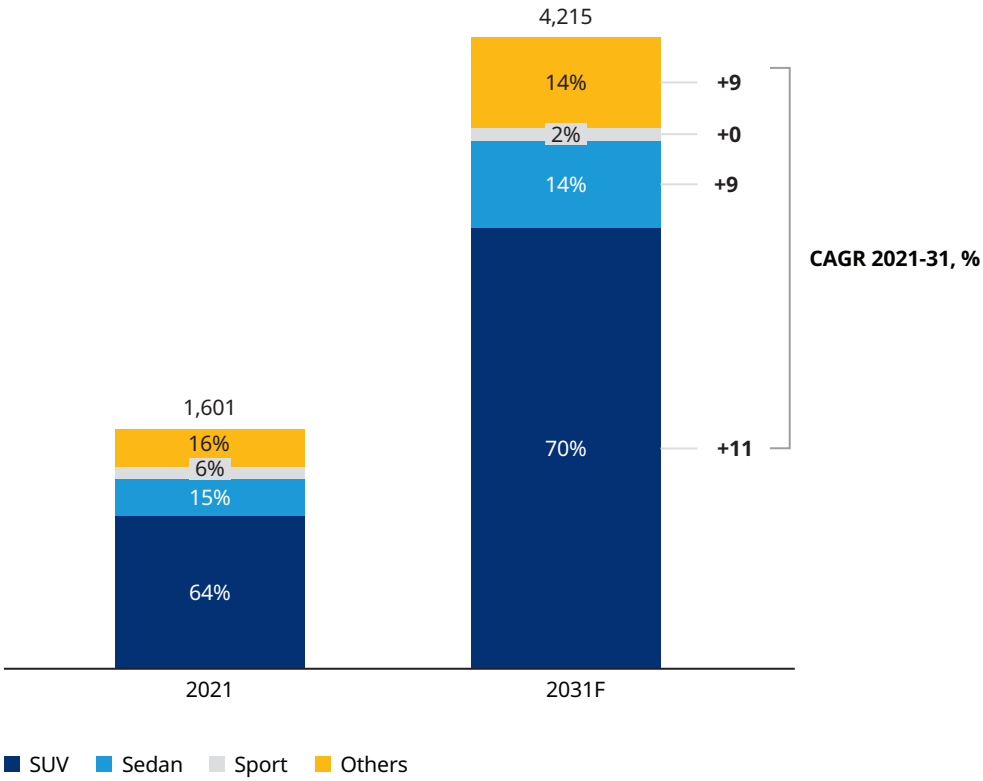


Source: Oliver Wyman analysis

SUVs WILL REMAIN AS MARKET FAVORITES

SUVs will keep leading the luxury and ultra-luxury vehicle market. Global customers have been showing a strong preference for SUVs for nearly two decades and this trend is expected to continue, mainly due to the advantages of SUVs in terms of safety, comfort, and broader practicality.

Exhibit 7: Global luxury and ultra-luxury vehicle sales volume by body type
In thousands

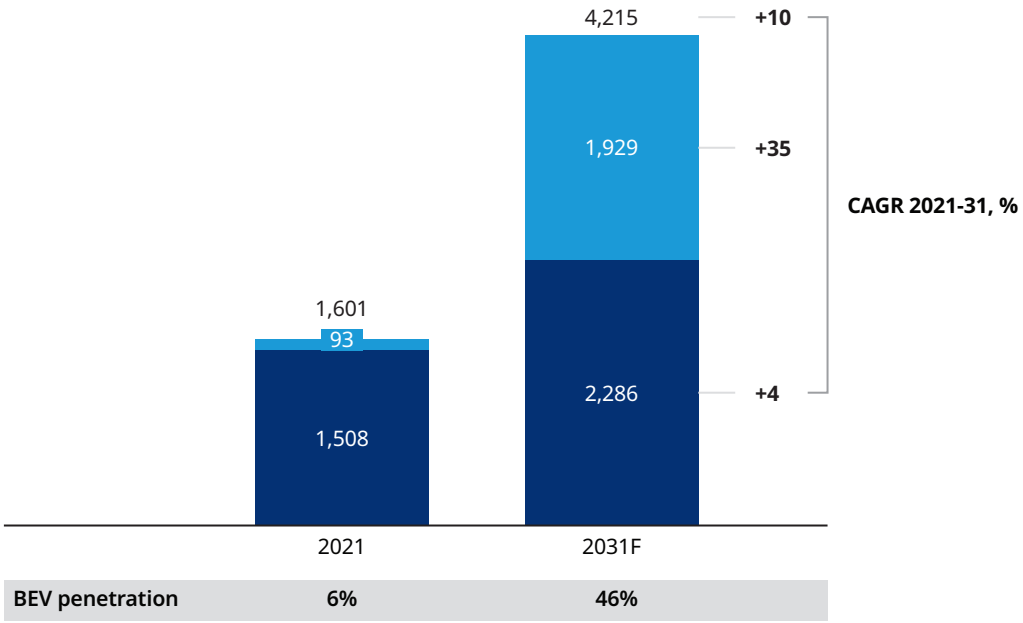


Source: Oliver Wyman analysis

ELECTRIFICATION EVOLUTION ABOUT TO TAKE OFF

The overall battery-powered electric vehicle (BEV) penetration rate among all luxury and ultra-luxury vehicles was about 6% in 2021. It is expected to grow to about 46% in the next decade. The luxury and ultra-luxury BEV market is expected to grow rapidly over the next 10 years, with a CAGR of about 35%, almost 10 times the CAGR expected for the luxury and ultra-luxury non-BEV market. Multiple forces are behind the increasing BEV penetration level, including electrification technology advancements, favorable government regulations, and the rising purchasing preference for BEVs among customers.

Exhibit 8: Global luxury and ultra-luxury sales volume by powertrain
In thousands



Source: Oliver Wyman analysis

The penetration of luxury and ultra-luxury BEVs, by price band, is detailed below. Specifically, the BEV penetration rate within the $80,000-$149,000 and $150,000-$299,000 MSRP tiers will rise to about 45% and 50%, respectively, in 2031. The higher MSRP price band of $300,000-$500,000 will achieve a higher penetration rate, reaching an electrification level of about 60% in 2031. However, the BEV penetration rate of the highest price band (greater than $500,000) will see a relatively slower pace toward electrification, with the penetration rate reaching 40% in 2031. This is because ultra-luxury customers purchasing the vehicles in this price band are more likely to pay for social recognition and the legendary images for which traditional internal combustion engine (ICE) vehicles still stand.

Exhibit 9: Global luxury and ultra-luxury BEV sales volume by price band

	Luxury		Ultra-luxury	
	$80k-$149k	$150k-$299k	$300k-$500k	> $500k
Sales volume (2021, k)	85	5.5	1.1	0.4
Sales volume (2031E, k)	~1,649	~242	~34	~3.5
CAGR (2021-31, %)	34	46	41	26
BEV P.R. (2031, %)	~45	~50	~60	~40

Source: Oliver Wyman analysis

THE GROWTH TAILWINDS FOR THE LUXURY AND ULTRA-LUXURY AUTOMOTIVE MARKET

Without any doubt, the luxury and ultra-luxury BEV market will be one of the most attractive markets over the next decade. Its promising growth will be driven by multiple forces affecting demand, supply, and policy perspectives.

RISING CUSTOMER DEMAND

The customer features and profiles of luxury and ultra-luxury electric vehicles keep evolving as more affluent customers emerge. Millennial, Gen Z, and female customers have become prominent forces among the target customer pool. Luxury and ultra-luxury automotive car owners are trading up their vehicles by choosing more premium EVs via car replacements, with a clear focus on sustainability and ESG.

- **Increasing number of HNWIs (including UHNWIs).** The growth of the luxury and ultra-luxury automotive market is significantly influenced by the wealthy, underpinned by the increasing number of HNWIs (including UHNWIs). HNWIs are the major target customer group for luxury and ultra-luxury electric vehicles, given the high price positioning and high level of customization. The number of HNWIs is expected to grow at a CAGR of about 9% in the next five years, reaching over 100 million in 2026, according to Knight Frank. The enlarged customer pool will further fuel the market growth for luxury and ultra-luxury vehicles.
- **Emerging Millennial, Gen Z, and female customers.** The changing automotive customer profiles are reshaping market demand, with millennials and Gen Z becoming important target customer groups. The digital-savvy younger generations are strong advocates of electric vehicles, as they place high importance on digital literacy and ecosystems. Millennials and Gen Z are also showing greater interest in the sustainability and green technology of EVs, and they are more willing to pay premium prices for these factors. In addition, as female customers are expected to manage two-thirds of household wealth by 2030, the number of female customers is constantly increasing, which will further expand the customer base for luxury and ultra-luxury electric vehicles.
- **Trading up for upgraded vehicle experiences.** Luxury and ultra-luxury vehicles are equipped with technological elements and intelligent features that provide better experiences for customers. For example, as the first automaker to apply ‘800V’ charging technology, a world-leading luxury original equipment manufacturer (OEM) is now able to maximize its charging power to 275kw and so charge its BEV model to 80% within 20 minutes, addressing the pain point of charging taking too long and so enhancing the overall driving experience. When purchasing new vehicles for upgraded experiences, customers who have the affordability therefore have a higher likelihood of tapping into this luxury segment.

As the EV transformation sweeps the automotive industry, customers have the chance to purchase luxury and ultra-luxury electric vehicles with better performance at a lower cost compared to traditional ICE models. For instance, the 0-100 km acceleration time for a leading luxury OEM BEV model with an MSRP of about $110,000 is 4.1 seconds, while the acceleration time of its direct competitor's ICE model is 4.7 seconds and costs nearly 40% more with an MSRP of about $150,000. With these numbers in mind, the OEM's BEV model would even appeal to some non-luxury customers.

- **Emphasis on sustainability and ESG.** Affluent customers are showing an increasing interest in ESG-related products, such as EVs associated with lower or zero carbon emissions. According to a survey conducted by Ocean Insights, 'profound brand history with sustainability' is among the top five customer perceptions of luxury and ultra-luxury automotive brands among Chinese customers. Leading OEMs, including luxury and ultra-luxury OEMs, are also setting out ESG-related initiatives, such as green supply chain transformation, to ensure they are meeting customer expectations of being a sustainable brand. Pushed by sustainability and ESG trends, it will be unsurprising to see more electric models introduced in the luxury and ultra-luxury automotive market in the near future.

MARKET SUPPLY PROLIFERATION

From the supply side, the market growth is being driven by increasingly abundant product offerings, more applications of cutting-edging technologies in luxury and ultra-luxury EVs, and the accelerated launches of BEV SUVs.

- **Higher willingness to offer luxury and ultra-luxury models.** Due to the fluctuation and disruption of the global automotive supply chain, OEMs are showing a higher willingness to produce and sell luxury and ultra-luxury vehicles, given their high profit margins, offering flexibility, and business resilience for OEMs navigating through this unpredictable, ever-changing situation.
- **Enriched EV product offerings.** Given the fast penetration and popularity of electric vehicles, incumbent OEMs are expected to launch more EV models in the coming years in the luxury and ultra-luxury segment, to both keep up with the latest EV trends and maintain their customers' attention. Meanwhile, emerging EV players are entering the arena across the globe with their luxury and ultra-luxury EV propositions, further enriching car buyers' options.
- **Cutting-edge technologies for luxury EVs.** With less strict cost boundaries, luxury and ultra-luxury OEMs can incorporate leading technologies, such as high computing power chips, smart cockpits with strong connectivity, or more advanced autonomous driving algorithms, into EV products. These applications further accelerate the penetration of electric vehicles in the luxury and ultra-luxury segments. As more electric vehicles outperform traditional ICE models in their various functionalities, via technological advancements for better batteries, safety, control, and other aspects, the entire luxury and ultra-luxury market will be in turn boosted to achieve higher growth.

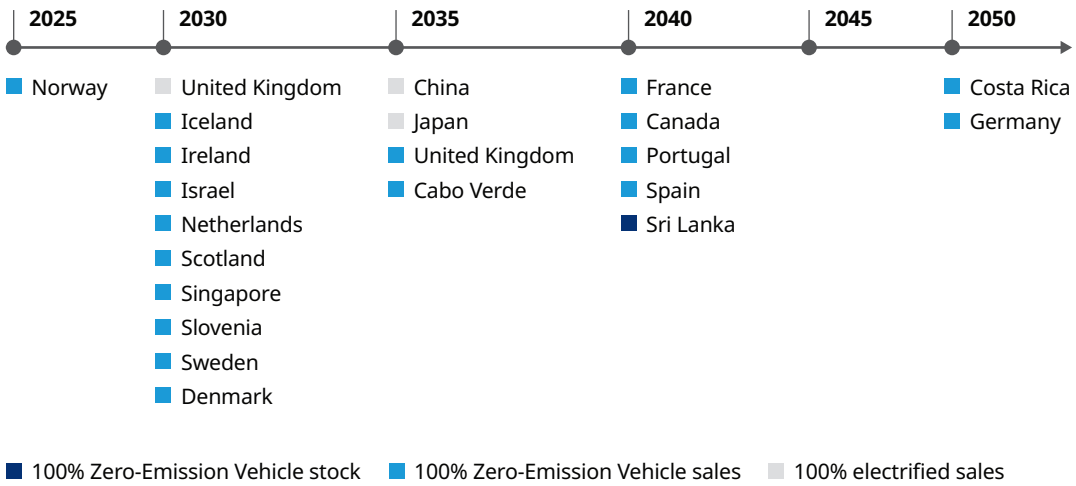
- **Accelerated launches of BEV SUVs.** SUVs have been a popular category in the traditional ICE market, given their perceived safety and practicality. Leading OEMs are currently pushing the electric migration of SUVs. More than 10 luxury and ultra-luxury BEV SUV models will be introduced in the next five years, and this number will increase in the longer term as the EV transition evolves. The share of luxury and ultra-luxury BEV SUV sales is expected to increase to about 40% in 2031 from about 20% in 2021, in particular by taking respective market shares from the other body types seen more frequently today.

ENCOURAGING AND FAVORABLE POLICY

Governments across the globe are introducing various EV-related policies, ranging from offering EV incentives to phasing out ICE sales, so as to stimulate the development of the EV market and demonstrate their strong commitment to achieving net-zero emissions. Several governments have increased the stringency of vehicle emission standards to further facilitate BEV deployment. Additionally, government expenditure worldwide on electric car subsidies almost doubled in 2021.

- **ICE sales phase-out and restriction policies.** With ESG being a priority for countries across the globe, the promotion of EVs has become an important lever to achieve sustainability goals. At least 20 countries have announced their plans to phase out ICE sales over the next 10-30 years, including both developed and emerging economies. More than 120 countries have committed to realizing economy-wide net-zero emissions in the next few decades. At the city level, some authorities are increasing the difficulty of acquiring ICE license plates while granting easy access to green license plates for EVs. The push from the government side will therefore drive OEMs to accelerate their EV transformation and shape customer preferences toward EV models.

Exhibit 10: Global roadmap to phase out ICE vehicles and achieve electric vehicle targets



Source: IEA Global EV Outlook 2021, Oliver Wyman analysis

- **EV-related incentive policies.** The automotive industry has been a critical pillar industry for many countries. With the global trend toward electric vehicles, countries are incentivizing OEMs and customers to make the switch and promote the development of the EV industry. Different incentives, such as tax deductions or exemptions, and purchase incentives, have been leveraged by the government to encourage stakeholders to accelerate the development of the EV market. For example, 21 out of 27 EU member states are presently offering incentives for the purchase of electric vehicles.

Exhibit 11: Selected countries' purchase incentives for BEVs, 2022

Countries	Purchase incentive per vehicle
France	**$6,400/household** for passenger vehicles
Germany	**$9,500** for cars with net list price ≤ €40,000
Italy	**$3,200** cars with a selling price of ≤ €35,000 + VAT
Spain	**$7,400** cars with a selling price of ≤ €35,000 + VAT

Source: ACEA, Oliver Wyman analysis

- **EV infrastructure development policy.** EV infrastructure, such as charging points (stations), and battery-swapping stations, is critical for the development of the EV industry and the continued sales of electric vehicles. Public policy is making the push to optimize the EV infrastructure network. The Chinese government, for example, aims to have in place charging infrastructure to meet the needs of more than 20 million cars by 2025. Meanwhile, Germany aims to expand its charging infrastructure network to 1 million publicly accessible charging points by 2030.

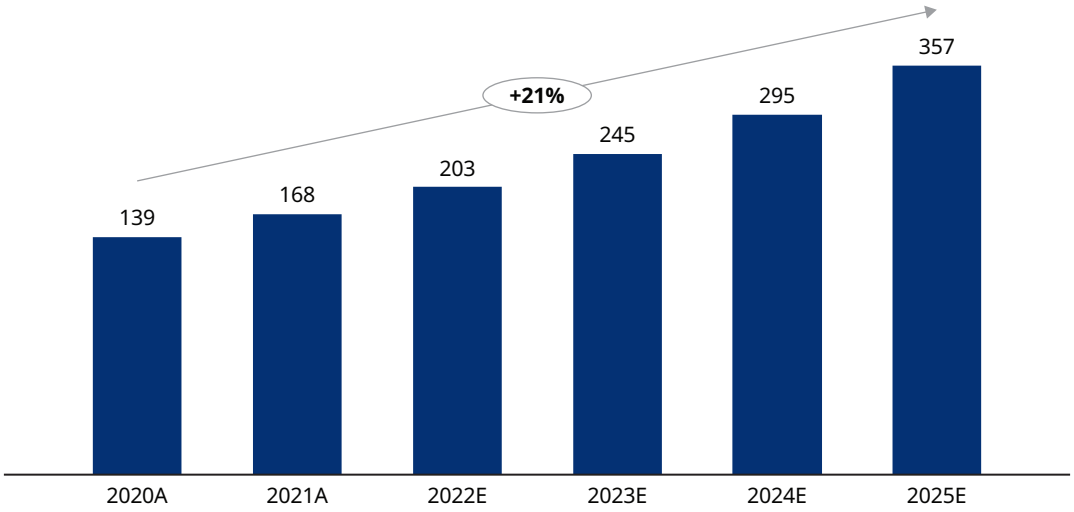
INFLOW OF CAPITAL INVESTMENTS

Similar to other markets, financial funding and investments have been important resources to boost the growth of the industry.

- **Surging investments in the EV market.** In recent years, companies aiming to achieve "CASE" (connected, autonomous, shared, and electric) progress have been viewed as favorable investment targets by capital markets and financial institutions. It is estimated that the investment directed toward EV-related companies will hit over $200 billion in 2022 and grow at an expected CAGR of about 20% until 2025. Luxury and ultra-luxury OEMs are reaping the rewards. A world-leading luxury OEM, for example, closed the largest initial public offering (IPO) deal in Europe (amounting to about $9 billion) in September 2022. Other incumbent OEMs are also considering realizing their EV ambitions through separate IPOs in an effort to benefit from the higher market capitalization enjoyed by pure-play EV makers. The convenient access to capital enables luxury and ultra-luxury automotive OEMs to invest more in electrification and other relevant technologies. For example, a leading luxury carmaker has invested about $1.3 billion in its hybrid and BEV programs to strengthen its presence in the EV market.

Exhibit 12: Global investments in EV-related companies

In USD billions



Source: Oliver Wyman analysis

THE NEXT GEAR FOR LUXURY AND ULTRA-LUXURY EVs

THE NEW TIDE FOR TECHNOLOGY

In addition to the traditional features of comfort, convenience, entertainment, and safety, luxury electric vehicles bristle with advanced autonomous driving, connectivity, intelligent interactions with smart cockpits, and enhanced vehicle usage experiences. Consequently, the market's luxury EV players have started refreshing their marketing and technology strategies based on these trends.

Advanced autonomous driving (AD)

Luxury and ultra-luxury automotive OEMs are introducing higher level autonomous driving features, given that they have fewer cost limitations regarding technology deployment. Advanced AD applications for luxury and ultra-luxury electric vehicles are supported by stronger computing power chips and more advanced algorithms. A US emerging BEV OEM's model has equipped independently developed AD chips, called full self-driving (FSD) chips, with the capability of over 100 trillion operations per second (TOPS). Considering the high initial research and development investments, more cutting-edge AD technological advancements, such as high-precision maps and high-pixel Light Detection and Ranging (LiDAR) technology, will soon be more readily available in luxury and ultra-luxury electric vehicles.

Connectivity

Luxury and ultra-luxury electric vehicles have a high degree of smart connectivity, as they are equipped with data aggregating sensors and connected with third-party devices. Luxury automotive customers have higher expectations on connectivity features, to complete their own digital experience and environment. Leading automotive OEMs are adapting vehicle communication with smart road and traffic services, and fully integrating smartphone and media subscription services into vehicles to meet customer demands. Besides providing tangible benefits to car owners, OEMs can also reap other benefits with connected vehicles. For instance, a few luxury car brands are optimizing and adjusting their new model specifications and prioritizing the most-used features by car owners based on their current models' real-time data.

Intelligent interactions with smart cockpits

Smart cockpit systems have been a critical differentiating point for luxury and ultra-luxury electric vehicles. A world-leading luxury OEM has equipped its EV model with two additional human-vehicle interaction screens on the passenger seat in its smart cockpit, apart from the central control screen, to upgrade the model's entertainment functions and features. Vehicle usage scenarios have been enriched as leading luxury and ultra-luxury brands are incorporating features such as itinerary planning and intelligent entertainment content access into smart cockpits.

Enhanced vehicle usage experiences

Luxury and ultra-luxury EV buyers expect high-quality service experiences after purchasing their vehicles. Leading luxury and ultra-luxury automotive OEMs are therefore providing the necessary OTA upgrades, and fast and exclusive charging options to ensure their customers' expectations are met. Aftersales services are shifting from purely selling spare parts toward the sale of services with digital interactions. For example, both a luxury EV maker and luxury ICE carmaker are providing OTA vehicle upgrade packages in lighting solutions, autonomous parking, and other areas to their customers for an additional charge. A US emerging BEV OEM has built a massive fast-charging network in China with over 1,000 stations, so as to provide its car owners a half-charge within 15 minutes. These value- added services will be the next profit pool for luxury and ultra-luxury automotive OEMs going forward.

Innovative materials

The emergence of innovative materials has enabled luxury and ultra-luxury OEMs to improve vehicle performance, realize their low-carbon footprint, and demonstrate their technical strength. A British luxury OEM's model, for example, is made of lightweight Kevlar (a strong, heat-resistant synthetic fiber, related to other aramids such as Nomex and Technora) and carbon fiber to reduce windshield resistance and improve vehicle speed. A world-leading luxury OEM, meanwhile, is also experimenting with the use of natural fiber blends to replace metal and plastic injection molded components to reduce energy consumption in manufacturing.

THE EVOLVING BUSINESS MODELS

Unlocking new monetization models

As electric vehicles are equipped with electronic architecture and more advanced software systems, luxury and ultra-luxury automotive OEMs are exploring new revenue streams, such as OTA services, to offset the large upfront costs and enlarge the profit margin. Through OTA updates, a world-leading luxury OEM is able to extend the range of its EV batteries remotely, for an additional charge to customers. Another emerging EV OEM is also piloting self-developed insurance in several states in the US to acquire the high-margin business of automotive insurance. The company-backed insurance also enables the OEM to have full access to the data generated by its cars. Doing so enables the OEM to achieve lower insurance prices via data analytics, thereby further cementing customer loyalty.

Exhibit 13: Select OTA services of leading OEMs

OEM	OTA options	OTA upgrade fee, USD
An incumbent luxury OEM	Intelligent range manager	$474 (one-time fee)
	Dynamic light system plus	$1,705 (one-time fee)
An emerging EV OEM	Full Autopilot/FSD	$12,000 (one-time fee)
	Advanced connected service (online theatre, karaoke etc.)	$9.90 per month
	MCU (media control unit) upgrade	$1,800 (one-time fee)
	Vehicle acceleration pack (a 0.5-second reduction in the acceleration time to 100 kilometers per hour)	$200 (one-time fee)

Note: Based on USA market OTA upgrade price of respective OEMs

Source: Public information, Oliver Wyman analysis

Adopting innovative battery charging models

Luxury and ultra-luxury automakers are adopting new battery-swapping and battery-as-a-service (BaaS) models that are already popular among drivers of two-wheeled electric vehicles. Some leading EV players are considering the launch of battery-swap stations to enable their customers to exchange used batteries for new ones, addressing customer concerns on battery life and end-of-life values. Incumbent automotive OEMs are assessing the feasibility of adopting a BaaS charging model where they separate the battery and vehicle at the car-purchasing stage, and charge battery usage by subscription, as pioneered by certain pure EV players in China. Customers can subscribe for the usage of battery packs of various capacities based on individual needs, and make payments on a monthly basis rather than making an outright purchase of a battery.

Emerging vehicle usage models

Automakers and their related stakeholders are offering more vehicle usage models by running car subscription and leasing businesses as alternatives to supplement the ownership and rental models. Vehicle subscription and leasing services grant customers the right to use vehicles within certain commitment periods based on monthly fees, covering all costs including maintenance, repairs, insurance, and taxes. Vehicle subscription and leasing models have gained traction from customers given the avoidance of upfront purchasing costs and the flexibility of trying out new models. It has been reported that about 15% of new car sales and usage will be generated from car subscription and leasing by 2030 in Europe and the US. Leading automotive OEMs have launched car subscription programs to help entice customers. A world-leading luxury OEM, for example, has introduced its 'Drive' car subscription program. The emergence of new vehicle usage models enables OEMs to expand their profit pools while providing a more flexible, convenient way for customers to use their vehicles.

Exhibit 14: Vehicle usage models on the car-based transportation spectrum

		Commitment period	Associated cost
Traditional vehicle usage model	Ownership	5-10 years	Customers bear the upfront purchasing and ownership costs
	Rental	Days	Rental fee includes car usage, repairs, maintenance, taxes (excludes fuel)
	Sharing	Minutes/hours	Trip/transportation fee
Emerging vehicle usage model	Subscription	One to several months	Subscription fee includes car usage, repairs, maintenance, taxes (excludes fuel)
	Leasing	1-3 years	Leasing fee is only for car usage (excludes repairs, maintenance)

Source: Oliver Wyman analysis

INTENSIFIED COMPETITION IN THE LUXURY AND ULTRA-LUXURY BEV MARKET

ENTRY BARRIERS FOR THE INCUMBENT AND THE EMERGING

In the next decade, electrification will continue to be one of the most important trends in the global automotive industry. The luxury and ultra-luxury EV segment, which is still in its nascent stage, will have the strongest growth potential in the future. This is accompanied by the electrification transformation of incumbent ICE OEMs and the emerging challenge of EV brands on the luxury and ultra-luxury market. Both incumbent ICE OEMs and emerging EV brands will encounter significant barriers if they wish to penetrate the luxury EV market. There would be a lack of relevant technologies and flexibility of transitional challenges for the former, and a lack of brand awareness and marketing and distribution capabilities for the latter.

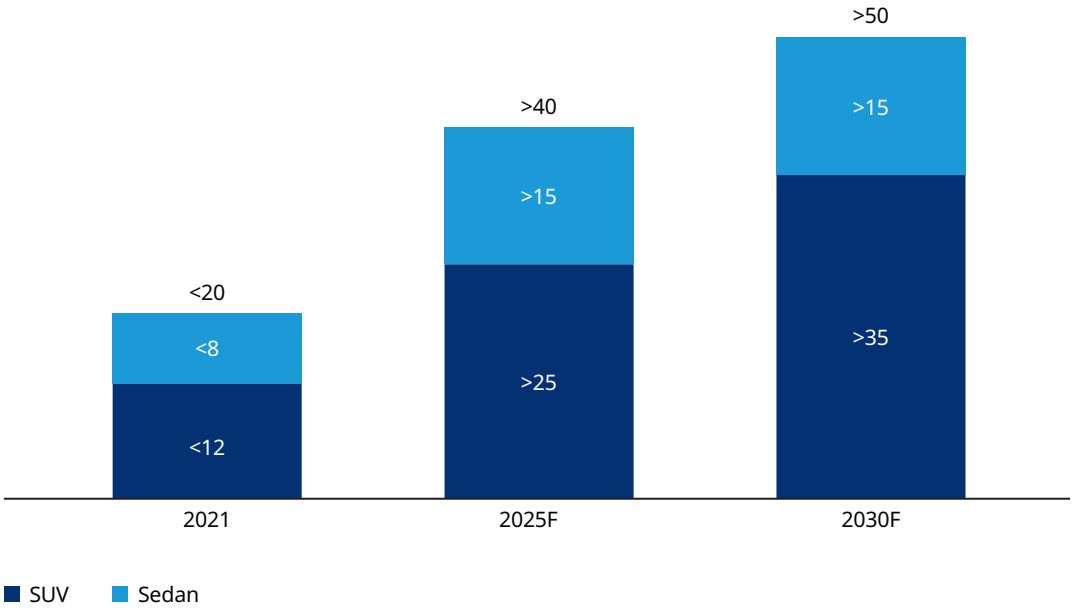
EXISTING BEV PRODUCT LAUNCHES ARE STILL LIMITED

In 2021, the luxury and ultra-luxury vehicle market only accounted for about 2% of all passenger car sales volume, with about 150 models launched in the market. Given the entry barriers into the luxury and ultra-luxury BEV segments, there are roughly less than 20 luxury and ultra-luxury BEV models in the market at present.

UPCOMING BEV PRODUCT LAUNCHES TO IGNITE THE MARKET

Almost all mainstream luxury OEMs have made public announcements regarding their electrification timeline and product pipeline, each with usually two to five BEV models in the works. In the next five years, we expect an influx of luxury and ultra-luxury BEVs to monetize opportunities in the market. The well-prepared OEMs that are determined about electrification will likely be the winners.

Exhibit 15: Projected accumulated numbers of luxury and ultra-luxury BEV models[1]



1. Based on public information disclosed by major luxury and ultra-luxury OEMs

Source: Oliver Wyman analysis

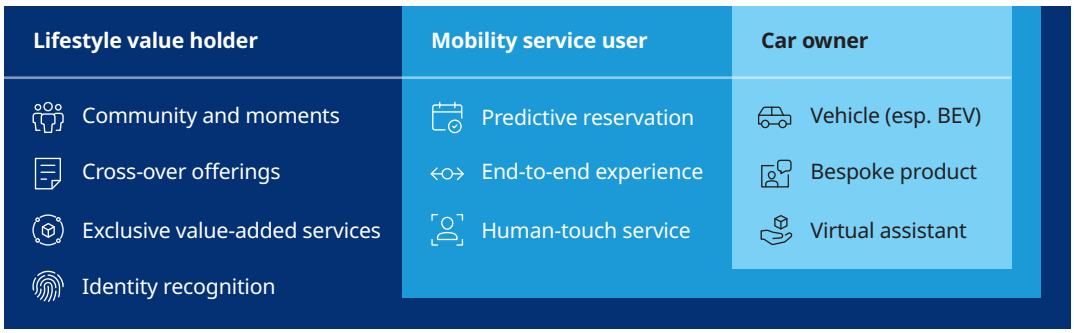
WAYS TO TAKE OFF IN THE LUXURY VEHICLE MARKET

Technology upgrades and the electrification revolution are sweeping through the entire luxury and ultra-luxury vehicle market. To prepare for the future, OEMs should place more emphasis on the following five strategic actions.

ACCELERATE PORTFOLIO UPGRADE

The phasing out of ICE vehicles in favor of electric vehicles is an irreversible trend in the luxury and ultra-luxury vehicle market. Despite the fact that luxury and ultra-luxury OEMs are under scale by mainstream automotive industry standards, the current paradigm also offers a lower legacy burden to make the shift completely toward being a pure EV player, as compared to non-luxury counterparties which will inevitably have to take their whole ICE product portfolio into consideration for electrification transition. In addition, players in the luxury and ultra-luxury battlefield need to expand and broaden the definition of "product", giving sufficient consideration on the potential offerings that they can create beyond the vehicles themselves. This is a whole new realm that is awaiting exploration. To position OEMs toward being "service providers" rather than just vehicle manufacturers would be a good start.

Exhibit 16: Extended portfolio matrix for luxury OEMs



Source: Oliver Wyman analysis

PLAY AS TECHNOLOGY PIONEERS

The technology landscape and spectrum around luxury and ultra-luxury electric vehicles are rapidly expanding, spanning from autonomous driving to batteries. Automotive OEMs should strike a delicate and strategic balance between the adoption of new technologies and the total production cost of the vehicles. Luxury and ultra-luxury automakers are embracing new technology opportunities either by in-house research and development, or through external collaborations based on their own strategic considerations and technological capabilities. For instance, an emerging BEV OEM in the US has decided to use self-developed batteries (the 4680 battery) for one of its car models. The batteries utilize dry battery electrode technology to improve energy density. Other OEMs, on the other hand, are collaborating with external battery suppliers for the same purpose. A strong technological proposition and a balanced build-up of one's own technological skills and portfolio will be essential for OEMs to have the market-winning edge.

Exhibit 17: EV related technology landscape and spectrum, non-exhaustive

Autonomous driving

- Reshaping transport networks
- Safety and security
- New profit pools
- Non-traditional players
- Vehicle to Vehicle (V2V)

Automotive multimedia and communication

- Redefining user experience
- Digital content
- In car Wi-Fi
- 5G LTE
- Personalization

Connected vehicles

- Interactive consumer lifetime journey
- Product – Service hybrids
- Customer profile and analytics
- Most valuable information provider

Batteries

- Battery-cell
- Vehicle-to-grid
- All-solid-state batteries
- Photovoltaic battery solutions

Connected car commerce

- Parking
- Shopping
- Ticketing
- Dinning
- POS
- Aftermarket service
- On-the-go payment

Telematics

- Predictive analytics
- Energy and emission management
- Data security and privacy
- Fleet management
- Service as R&D

Source: Oliver Wyman analysis

BUILD-UP OF ORGANIZATIONAL COMPETENCIES

To win market share in the global luxury and ultra-luxury vehicle market and accelerate business expansion, organizational competency is a critical backbone. However, the route and footprint might vary for different players. On the one hand, incumbent OEMs are expected to be more innovative and open-minded, actively accelerating their organization transformation by integrating more revolutionary approaches, such as user experience or digitalization of customer interactions, to strengthen their organization. On the other hand, for emerging OEMs to be successful and solid players in the field, they have to reinforce their global governance and cross-border business collaborations by learning the best practices from incumbent ICE brands.

GO TO MARKET WITH DTC

Personalized and individual experiences play a more pivotal role when it comes to affluent customers shopping for luxury cars, as can be seen from the results of general luxury-goods purchasing and those of other innovative automotive OEMs. Therefore, the DTC channel has become an essential part of sales and marketing for luxury and ultra-luxury OEMs. Leading luxury OEMs are actively introducing a DTC business model, particularly in regions such as Europe and China, where policies encourage the purchase of EVs. However, the DTC model can be dramatically expensive. It can also pose a threat for ICE incumbents with regard to their relationships with traditional dealers. Even emerging BEV OEMs are facing increasing financial burdens to build up more DTC stores when sales volumes grow. To combine the dealers' 4S stores with direct retail stores might be one solution. Under this approach, the DTC model would only apply to the trendy or iconic retail stores located downtown for brand promotion and vehicle showcasing, while the 4S stores would be located in the suburbs to reduce costs. Another option lies in the utilization of dealerships. By transforming into an agency model rather than directly into a dealership model and adding this to the OEM's map of self-owned DTC stores, dealers are kept in the game. The dealers continue to own and operate the stores, while getting more guidance and support from the respective OEMs. Under the agency model, orders would be directly placed to OEMs, which in turn would have deep channel involvement to achieve a lot of direct control without heavy asset investment, or the likely opposition they would otherwise face from dealers.

LUXURY BRAND REPOSITIONING

In the new CASE era, luxury and ultra-luxury OEMs need to rethink their brand positioning by taking into consideration both maintaining their brand's original DNA and upgrading the brand to take advantage of new perspectives. In this new age, the old-fashioned brand images of driving experience, engine performance, passion, or being part of the business elite have become obsolete. Instead, features around advanced technology, sustainability, and having an integrated customer experience have become more appealing to affluent customers. Reflecting this shift, a German luxury OEM has added terms related to rejuvenation, digitalization, and sustainability to its new brand definition. A well-known luxury OEM's new luxury definition, meanwhile, is "No Sustainability No Luxury". Moreover, investors via mergers and acquisitions are continuing to play an important role, as brands are acquired or privatized with more resources to achieve accelerated turnaround and revitalization. Renewing a brand's positioning is normally necessary for this practice, and complete brand upgrades are necessary and essential for all luxury and ultra-luxury players.

Besides the major tasks mentioned above, there are other challenges and obstacles that OEMs cannot ignore. While the idea of open consumerism is scorned, customers in the West are increasingly stepping away from physical vehicle ownership. Marketing campaigns that highlight a car being fun to drive or try to focus on customers' enthusiasm of motorsports, previously frequently adopted by many luxury vehicle brands, are fading away. Moreover, carbon emission regulations are making the competitive landscape more complex so that the pure EV powertrain is not sufficient for product differentiation anymore. Unpredictable global trade restrictions are also placing obstacles on the export business model, commonly used among major luxury brands. Due to ever-increasing capital expenditure requirements and demands, initiatives to control costs and create new value are also essential. Finally, due to the disrupted global supply chain, the traditional "build your own" approach will face even more challenges.

Fortunately, challenges also offer opportunities. The pay-per-use model is becoming a viable business model for many OEMs and customers, which in turn generates new revenue streams. Geographic and localization strategies, meanwhile, can help OEMs cope with trade restrictions and better serve local demands. To realize better differentiation, luxury players could consider launching niche models as limited or collector editions. Building a complete ecosystem, not only a car, but also a community, a place to drive, network, and more is another smart tactic that OEM players, particularly those in the West, could embrace. Last but not least, establishing an open supply chain network and leveraging outsourced value creation to cover both new and traditional vehicle architecture might just be more practical in a post-pandemic world.

OUTLOOK

Within the relatively flat global passenger vehicle market, the luxury and ultra-luxury vehicle market offers robust growth potential in the coming decade. Though current offerings are limited, we believe the electrification of the automotive industry will achieve tremendous market penetration momentum, along with the ever-increasing awareness and desire for sustainability, and preference for advanced technology among affluent customers. To lead the pack, OEMs should fully mobilize their resources in all facets, including product design, business model, sales channel, and organization, and act immediately.

Oliver Wyman is a global leader in management consulting. With offices in more than 70 cities across 30 countries, Oliver Wyman combines deep industry knowledge with specialized expertise in strategy, operations, risk management, and organization transformation. The firm has more than 6,000 professionals around the world who work with clients to optimize their business, improve their operations and risk profile, and accelerate their organizational performance to seize the most attractive opportunities.

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