Automotive Modularization Trend Research Report, 2021

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STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES

- To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- To help company to succeed in a competitive market, and

METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

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Abstract

Research on automotive modularization: the creation of electric modular platforms, the reduction of the number of platforms, and the development of core platforms

The demand for low-cost and short development cycles of new models promotes the development of automotive modular platforms.

An automotive modular platform includes the design and assembly of all sub-systems of a car in a modular manner, and the standardized design and production of auto parts in the form of modules, and the final "assembly" according to the positioning of models.

Volkswagen's MQB Platform

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Unlike the traditional automotive platform which is only for models at the same single level, the modular platform reduces R&D and production costs and shortens the development cycle of new models. At the same time, it facilitates to unify quality standards and improve the overall strength of products.

Since Volkswagen launched the MQB platform in 2012, international automakers (including Toyota, Renault-Nissan, Mercedes-Benz, BMW, etc.) and Chinese counterparts (like Changan, Geely, and GAC) have all released their own modular platforms, covering multiple levels and models.

Automotive Modular Platforms of Major Automakers in the World

	Automakers	Main Modular Platforms/Architectures
Foreign	Volkswagen	MQB, MLB, MSB, PPE, MMB, MEB
	Toyota	TNGA, e-TNGA
	Renault-Nissan	CMF, CMF-EV
	BMW	CLAR, ULK
	Benz	MFA, MRA, MHA, MSA, MEA
	Hyundai	E-GMP, i-GMP
	GM	BEV3
	PSA	CMP, EMP2
Domestic	Geely	AMA, BMA, CMA, DMA, PMA, SEA
	GAC	GPMA, GEP
	Great Wall	Lemon, Tank
	Chery	@LIFE, T1X, M1X, A3X, M3X, NEV
	Changan	P1, P2, P3, P4, Ark, EPA0, EPA1, EPA2
	BYD	e-Platform
	BAIC	BMFA, BE22, IMC
	FAW Car Besturn	FMA

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It is an inevitable trend to build a dedicated modular platform for electric vehicles

At present, new energy vehicles have represented the main direction of the transformation and development of the global automotive industry. In 2020, 3.125 million new energy vehicles were sold worldwide with a year-on-year increase of 41.4%. The figure is expected to reach 15 million by 2026.

In this context, it is a mainstream trend to build a dedicated modular platform for electric vehicles. Compared with the oil-to-electricity platform, the modular platform features advantages like longer mileage and better safety. At present, most companies have launched or planned to launch their exclusive platforms for electric vehicles. In addition, companies including Volkswagen, Mercedes-Benz, and PSA that use the oil-to-electricity mode to produce new energy vehicles have also begun to study and unveil their own dedicated platforms for electric vehicles that are being developed.

Electric Vehicle Modular Platforms of Major Automakers in the World

Automakers	Electric Vehicle Modular Platforms	Launch Time
Volkswagen	MEB PPE	2018 2022
Benz	EVA MMA	2021 2025
Hyundai	E-GMP	2020
GM	BEV3 Ultium	2020 2021
PSA	eVMP	2023
Geely	PMA SEA	2016 2020
GAC	GEP	2017/2019
Chery	@LIFE	2020
BYD	e-Platform	2019/2021

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Electric vehicle modular platforms are mainly proposed by traditional automakers that follow the product layout of the fuel vehicle model when manufacturing electric vehicles, but they are more inclined to build a wide range of electric vehicle product lines to meet the demand of different consumers in different market segments. Therefore, modular platforms extend to electric vehicles.

The emerging automakers represented by Tesla adhere to the principle of short product lines, and pay more attention to the design advantages of a single model and the software upgrade of the entire vehicle. Modular platforms are of little significance to them.

Fewer platforms and core platforms embody the development direction

Under normal circumstances, automakers offer multiple modular platforms for different models, and each modular platform covers a limited range of models. In the future, they will focus on reducing the number of platforms, emphasizing core platforms, and raising the output of core platforms. The move will help further reduce costs and improve efficiency of R&D and production.

At present, Volkswagen, BMW, and GM have announced their platform integration plans. In the future, they will prioritize the development of core platforms instead of the existing multiple platforms.

Platform Integration Plans of Automakers

Automakers	Development Plans
Volkswagen	The Volkswagen Group will introduce a single platform for most electric vehicles across its brands in the future, with the new architecture being developed by Volkswagen's Project Trinity eventually replacing the current MEB and PPE platforms. The new Scalable Systems Platform (SSP) is currently being developed within Volkswagen, and is set to be used for the first time as part of the first car developed by Audi's Project Artemis in 2024 or 2025. The hardware for the SSP platform is based heavily on the current MEB and PPE architectures, currently used for volume and premium EVs respectively.
BMW	BMW announces that it will launch the New Class platform (Neue Klasse in German) in 2025. The upcoming platform is designed for all-electric vehicles, but diesel and gas ICE, hybrid, and hydrogen fuel cell powertrains can also be fitted into the new platform. It will ultimately replace the UKL and CLAR units it currently uses.
GM	By 2025, General Motors is planning to streamline its vehicle platforms from nearly 30 to a grand total of four flexible vehicle sets. Internally called Vehicle Set Strategy, or VSS, the initiative has a completion date of 2025 – by which time all GM vehicles will use one of the four sets. VSS can not only develop traditional energy (gasoline/diesel) vehicles, but also manufacture new energy vehicles.

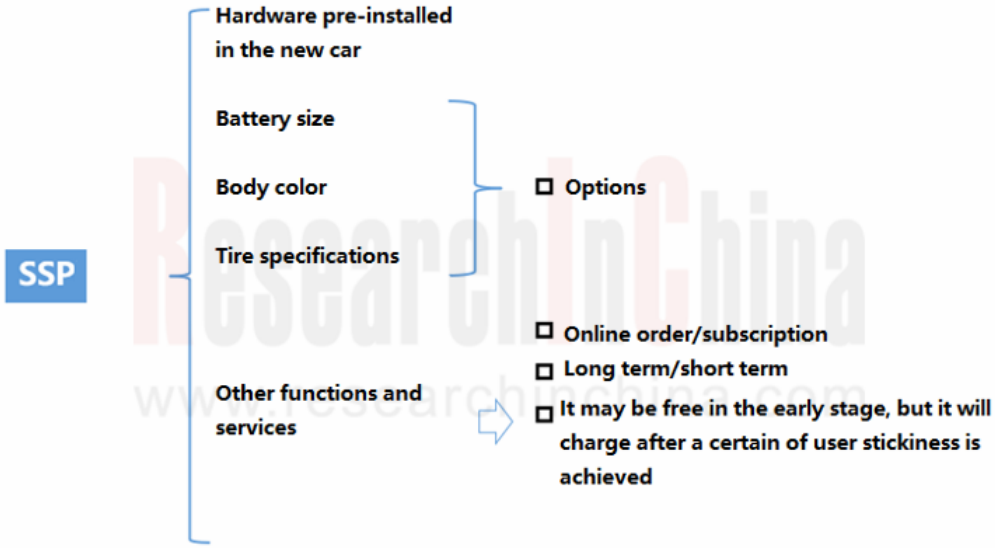
Source: ResearchInChina

Brand new E/E architecture pushes transformation of the profit model of automotive industry

While launching modular platforms, some automakers have begun to upgrade their E/E architectures to "domain integration" or even "centralized" style. For example, the Geely SEA architecture adopts a brand-new E/E architecture which integrates three domains, and it will introduce a centralized architecture in the future. In the future, with the development of modular platforms, it is expected that the E/E architecture of automobiles will be upgraded.

However, due to the adoption of the automotive E/E architecture, the on-board software system has to be re-integrated, which will gradually shift the profit model of the automotive industry from the hardware-oriented mode to the software and services-oriented mode. Currently, Volkswagen has stated that it will launch a new business model for the Scalable Systems Platform (SSP) in 2024.

Future New Business Model for Volkswagen SSP



Source: ResearchInChina

Modular body is expected to be mass-produced

Modular body means that the combination of the same chassis and different modular compartments can be used in different scenarios to improve vehicle utilization. At present, traditional automakers and emerging technology companies including Fiat, Mercedes-Benz, Rinspeed, Rivian, Schaeffler, etc. have launched concept cars with interchangeable bodies.

Although most of the current modular cars are concept cars, some companies have put mass production on the agenda.

Mass Production Plans of Car with Modular Body Design of Major Global Companies

Companies	Production Plans
Fiat	Fiat revealed at the beginning of 2020 that Centoventi would be officially launched within two years.
Electric Brands	The German startup Electric Brands has announced the eBussy – an electric modular light vehicle (class L7e) designed with two variable chassis and 10 different body options. Series production is scheduled to begin in 2021H2 with a contract manufacturer in Heinsberg. In the first five years of production, 150,000 eBussy are to be built. The basic vehicle, i.e., a cabin with chassis, is to be available from 15,800 euros. The future campervan is to start at 28,800 euros.
Rivian	The R1T electric pickup was scheduled to be put into production at the end of 2020, but it has not been disclosed whether it has been in mass production.
PIX	PIX has completed small-scale manufacturing and delivered dozens of different chassis and mobile spaces worldwide
Canoo	Canoo's three models will be launched in 2022

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