

Preface

After nearly 20 years of development by leaps and bounds, auto stock market in China is poised to emerge as the world's largest single market, with both large scale and rapid growth attracting attentions of an increasing number of companies and capital. Surging vehicle stock and average vehicle age reflect the continuous growth potential for China's aftermarket and in-depth development of industry internet brings a breakthrough in efficiency for the entire value chain of auto maintenance market with the aid of digitalization, further accelerating reform and integration of the industry.

Based on leading service practice, cutting-edge observational research and analysis of Deloitte in auto industry and in-depth interview with and desk research of market and industry experts, the paper provides an all-round analysis of auto maintenance market, with the following core insights and abstracts:



Market: Golden opportunity for magnificent transformation to high-quality development as the world's largest single market has been just grown up

- Maintenance market capacity continues to grow at a respectable rate, expected to reach **1.7 trillion** by 2025
- As both midstream and downstream of the industry are immature, internal drivers are still required for further development towards maturity even though supporting policies for industry openness are intensively rolled out
- Industry reform has been boosted by capital over the past three years. The number of individual financing greater than RMB 100 million in the industry is more than **50**, while capital investment has started to tend rational apparently



Consumer: online retailing experience, the key to consumers aspiring for "quality assurance, one-stop convenience and comfortable experience"

- With a late start in China's auto industry, the number of cars per thousand people is merely **173**, far lower than that in developed countries such as Europe, America and Japan, accounting for limited knowledge of consumers about auto products and immature concepts on auto maintenance
- China's workforce has **20%** less leisure time per day compared to developed countries, and a busier lifestyle gives rises to a higher expectation of consumer for maintenance service of "quality assurance, one-stop convenience, comfortable experience and cost efficiency"
- Chinese consumers have exhibited great interests in online maintenance services, resulting in a hopeful **online** maintenance service **rate** of **22%** by 2025
- Among maintenance consumables, "engine oil, battery and tire" are with the highest online retailing rates ranging from **5% to 10% in general**, and the penetration rate of online retailing will be further improved in the future



Industry Development Trend: Digitalization reshapes "Man, Goods, Payment, Customer and Store", transforming value chain integration from capital integration to dataflow integration

- The maintenance industry has an obvious trend of vertical integration in the value chain, with M2B2b2c and S2c models already the mainstreams of transformation
- Transformation of the entire industrial model is getting started and online enterprises are now starting to lead the way. S2c model is likely the ultimate form of the mid-term and there is hopefully a tycoon emerging and propelling the industry concentration
- What behind the model reform is the in-depth penetration of digitalization, but downstream standardization and technology accumulation are important capabilities as well since online enterprises have differential advantages from upstream and midstream enterprises on the original value chain
- Industry consolidation will be further accelerated and online enterprises will boost the in-depth cooperation with enterprises on the original value chain to form a new integrated community, complete vertical consolidation and continuously enhance industry concentration



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Chapter I

Just in time for magnificent transformation of China auto maintenance market through expected accelerating transformation

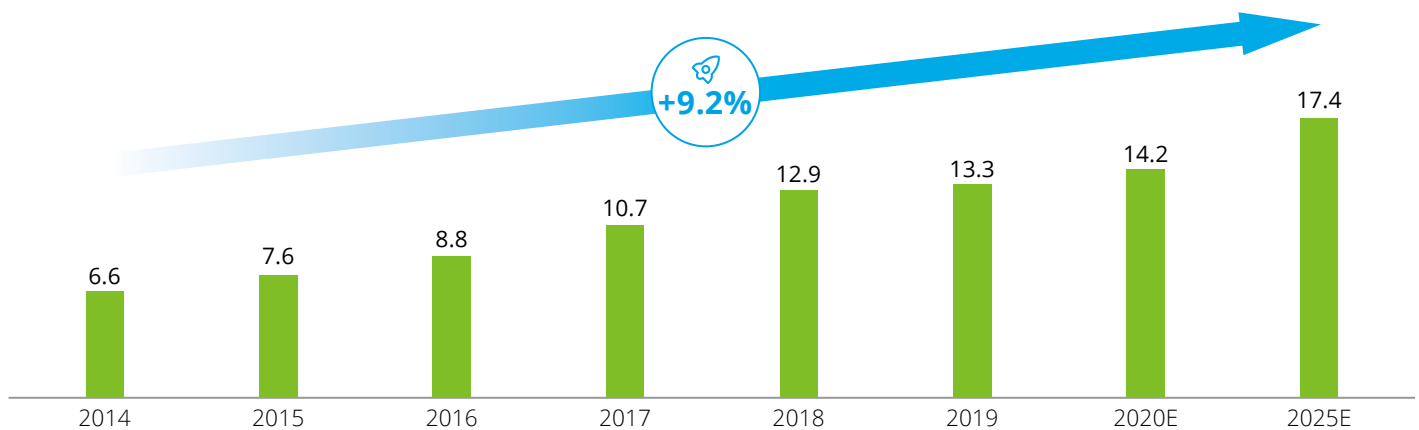


1.1 Auto aftermarket of China: There is still a long way to go for standardized development as the vital livelihood economy market at a trillion yuan level has been just grown up

Slowdown of new auto market growth of China is a tide. As the world's largest "stock" market is about to change to China, great stock treasure of which draws lots of attention, auto market in China has been no longer the monodrama of new car "increment". In the complex and lengthy auto aftermarket industry chain, maintenance business is one of the industry segmentations that are "demanded for most rigidly" and "consumed relatively frequently" in the consumer vehicle life cycle. Considering its characteristic of a large industry scale and China remaining as the world's largest sales market to continue in injecting fresh blood into the aftermarket even though the growth of new auto sales has been slowed down, auto maintenance industry will become a star track in the aftermarket for a very long time to come, continuing in attracting attentions of the industry and the capital.

The magnificence of high-speed auto maintenance market growth in China is hard to cover the pain points of long-term development. Despite rapid growth of auto aftermarket scale over a dozen years, various issues and pain points of industry development behind the prosperous development have been long obscured by rapid growth. However, accompanying the development of new technologies and consumers moving towards maturity, market reform is expected to speed up and the window for industry reshuffle is bursting to get out.

Figure 1.1-1: Auto Maintenance Market Scale of China: 2015-2025 (in hundred billion)



Source: Forecasts of auto maintenance market scale comprise repairs and maintenances for passenger cars and commercial vehicles, with the data prior to year 2018 deriving from public information of China Association of Automobile Manufacturers and both the market data of year 2019 and forecasts for years 20-25 based on Deloitte Forecast.

"China has witnessed an explosive expansion of auto market over the last decade, but the entire auto market is at a decentralized, disordered and small-sized phase as service market is comparatively backward and has started to grow rapidly in the last 10 years, which are pain points of the industry and great chances as well. Along with the development of mobile internet and digital technology, I think there will be new models that are more in line with market demands and larger leading enterprises guiding the industry towards higher quality development in the future"

Secretary General of Automotive Maintenance and Repair Working Committee of China Automotive Maintenance and Repair Trade Association

Mr. Wei Tongwei

Note: "Auto maintenance market" mentioned in the paper refers to auto test, repair and maintenance market.

Affected by economy, industry foundation and social factors of Chinese characteristics collectively, some particular features have taken shape in the development of auto maintenance market in China:

Large Market Scale and Rapid Growth

Benefited from fast economic growth and demographic dividend over the past two decades, auto sales of China have been growing robustly for a long time, with the vehicle stock in China hopefully exceeding America in 2020 to become the world's largest vehicle stock market. In addition, the auto market in China remaining as the world's largest market of new auto sales for years in association with the surging average vehicle age will jointly drive continued high growth in the aftermarket.

Prominent Social Benefits

Auto industry is a special industry featured by large scale, high manufacturing cost, long investment cycle, fund concentration and labour intensity, rapid expansion of

which in China stimulates the development of associated industries of upstream and downstream remarkably. In 2017, the gross output value of the national auto industry amounted to RMB 8.82 trillion, accounting for 7.6% of the gross industrial output value in China. In terms of auto industry chain, it is in a position to spur on the development of more than 100 industries. According to the Blue Book of Annual Report on Automotive Industry in China (2019), the direct number of practitioners in the auto manufacturing by the end of 2017 reached at 6.3 million, an increase of 209% in a decade compared to 2.04 million in 2007. Development Research Center of the State Council conducted an analysis of input-output tables of 62 departments of China in 2005, with the result showing that every 1 yuan of value added to the auto manufacturing can drive an increment of RMB 2.64 to associated industries of upstream and downstream. The State Information Center views that the employment ratio of auto industry (including spare part enterprises) to associated industries is 1:7, namely every one job added in the auto industry gives rises to seven jobs added in associated industries. Based on the calculation of China Automotive Industry: Bilingual Edition, auto industry is the primary manufacturing industry from the perspective of employee driven by the whole industrial chain.

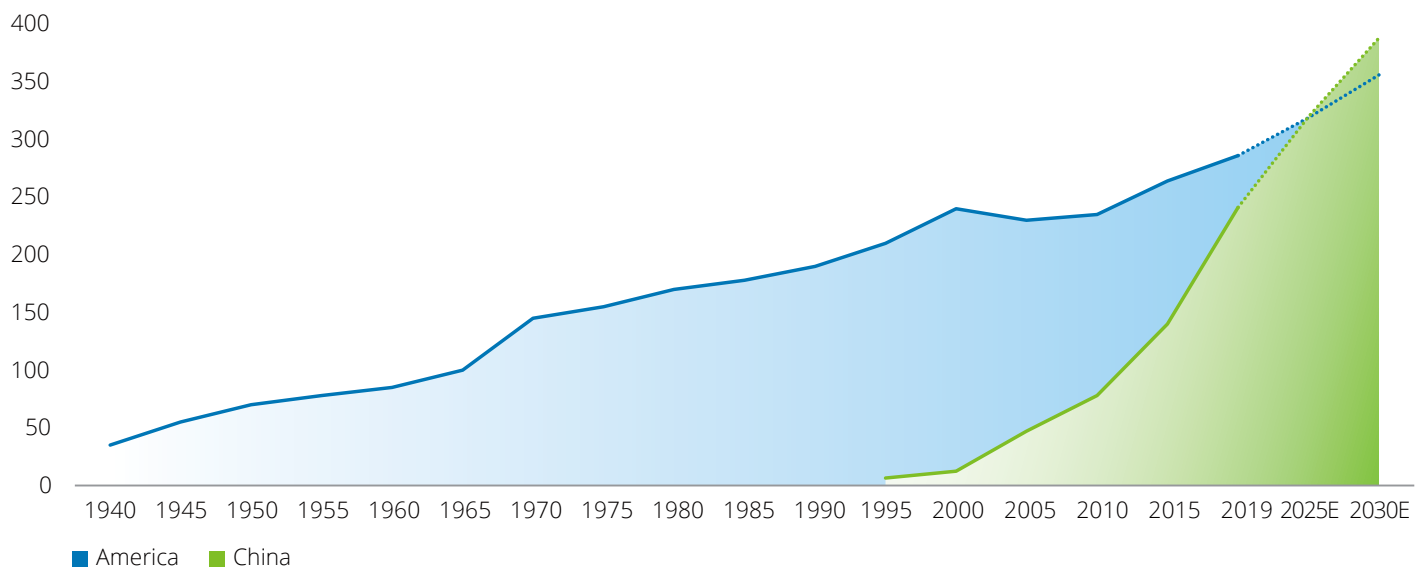
Low Industry Maturity

Compared to developed markets in Europe and America which have experienced nearly a century of development, Auto maintenance market in China with a short history is still in infancy. And the rapid growth of the industry has many immaturities and pain points:

- **Irregular development for lacking industry standards.** Due to a variety of factors such as short history, lack of authority of trade associations, inadequate policy system and low degree of market concentration, maintenance market in China is currently short of standards and certification systems for major parts, service processes and maintenance technologies, indicating a long way ahead before realizing the standardization of industry development.

- **Low level of informatization.** Although the drastic development of digital technology in recent years has led to the emergence of a mass of smart retail models based on it, the percentage is still small. From the perspective of practitioners in the industry as a whole, the quality varies from one to another. Many practitioners lack digital awareness of management and excessive competition undermines the purchase power of enterprise informatization, aggravating the state of inadequate demands and understandings of practitioners for industry informatization.

Figure1.1-2: Comparison of passenger car stock between China and America auto market (in million)



Source: AAIA, CEIC, HIS, Modelling and Calculation of Deloitte

- **Asymmetrical information of maintenance technology.** For the past few years, the state has rolled out in a frequent manner related policies prohibiting technological monopoly of auto makers in terms of after-sales maintenance and requesting them to disclose auto maintenance and technology information to the public without distinction. However, from the aspect of industry practice at the moment, most makers are cooperative superficially but deficient in the disclosure of information quality, supporting testing tools and other aspects. Given the current quality of technological disclosure, it is difficult to meet the needs of the third-party practitioners in the auto service industry for information symmetry, which impedes their development to some extent. The transparency of aftermarket information, the openness of the development and the diversification of channels still require continuous efforts of practitioners.

Mr. Xu Shuquan from China Academy of Transportation Science made public the current work progress of maintenance technology in the "Green Car & Auto Aftermarket Innovation Forum". The work report states that at present, more than 95% of auto enterprises have opened online platforms to disclose corresponding information of maintenance technology, **but there are also some challenges on account of unprofessional data processing, incomplete disclosure of the content, varied quality of disclosure,** user-unfriendliness of online platforms for information disclosure, etc. As you can see, under most circumstances, **there is a countermeasure under the policy relevant to the disclosure of maintenance technology in China, and manufactures are mostly following daily routines and with reservations.**

- **Incomplete talents training system.** Based on incomplete statistics of experts in auto aftermarket trade association, there are nearly a thousand colleges and universities in the country that offer auto maintenance specialty, and thus it shouldn't be a shot board of the industry by quantity. However, the reality is that there is a mismatch between personnel from colleges and universities and the demand of terminal network for talents, resulting in the situation that there is still a lack of top and high-quality talents as a large number of academic talents do not eventually enter into the auto service industry. Accordingly, the traditional "apprenticeship model" but in-house training for non-academic talents is prevailing in the large number of trainings for network talents of auto service in the auto service industry, which is also one of the core pain points that currently restrict the high-quality development of the industry.
- **Immaturity of investors in the industry.** Due to a comparatively short history of China's auto industry, most of the current operators of independent aftermarket network in China are the first generation of investors without a related professional background. In particular, most of them entered into the auto service industry in the downstream from the auto parts industry with obvious characteristics of parts sales but various service consciousness, business quality, management ability, digital capacity, etc. In addition, there is a persistent lack of quality investors and participants to some extent, which constitutes an obstacle to the high-quality development of the industry.

Uneven Quality of Industry Development

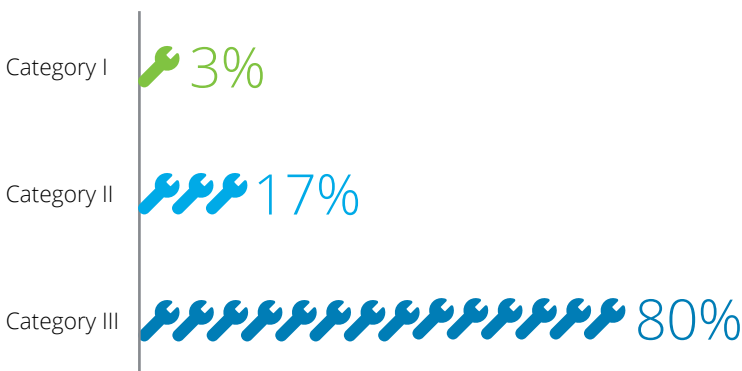
• **Varied development quality of practitioners due to a low industry access threshold.** Affected by industry peculiarities, barriers to the entry in terms of basic service technology, fund, talent, industry qualifications, etc. of maintenance market are relatively low, resulting in a multitude of small and medium-sized maintenance companies in the industry today, especially in the vast and weakly regulated sink market where unlicensed networks largely exist. They are often deficit in operating environment, service quality, personnel quality, etc., continuing exacerbating negative stereotypes of the society for maintenance industry.

Based on the incomplete statistics of Information Work Committee of China Auto Maintenance and Repair Trade Association in 2017, the total auto maintenance enterprises nationwide registered at the Industry and Commercial Administration was around 430,000 by the end of 2017. The percentage of Type I large integrated maintenance enterprises is less than 3% while Type II auto maintenance enterprises less than 20% and more than 80% of the registered enterprises in the market are Type III small and medium-sized maintenance enterprises. It is expected that there are tens of thousands of small maintenance enterprises other than the registered enterprises. Overall, proportions are disparate and the quality is uneven. Sizable maintenance enterprise of a truly high quality does not account for a high proportion.

• **Social status of practitioners to be upgraded.** Since the reform and opening-up, consumers have commonly been deficient in valued recognition and respect for workers of service sector due to the remarkable demographic dividend and labour redundancy in China, especially the maintenance industry of poor operating environment filled with excess disordered competition. In particular, grassroots practitioners (mainly auto mechanics) in the maintenance industry are undereducated and underpaid. In this regard, auto maintenance industry's attraction to talents is woefully insufficient, which further deteriorated the shortage of high-quality talents in this industry. Such vicious circle results in the situation of insufficient social status and professional dignity of auto mechanics in China.

As estimated by experts of the trade association, approximately 70% of the 4.7million practitioners across the nation have only the education level of junior high school, with less than 30% of them having maintenance and testing capability. Such talent structure has seriously restricted the development of auto maintenance industry.

Figure 1.1-3: The proportion of auto maintenance enterprises in China by category (registered businesses only)



Source: Information Work Committee of China Auto Maintenance and Repair Trade Association (2017 Disclosures), Expert Interview, Deloitte Research

With the expansion of aftermarket scale and deepening of industry development, pain points arising from the above characteristics are becoming more and more explicit and distinctive:

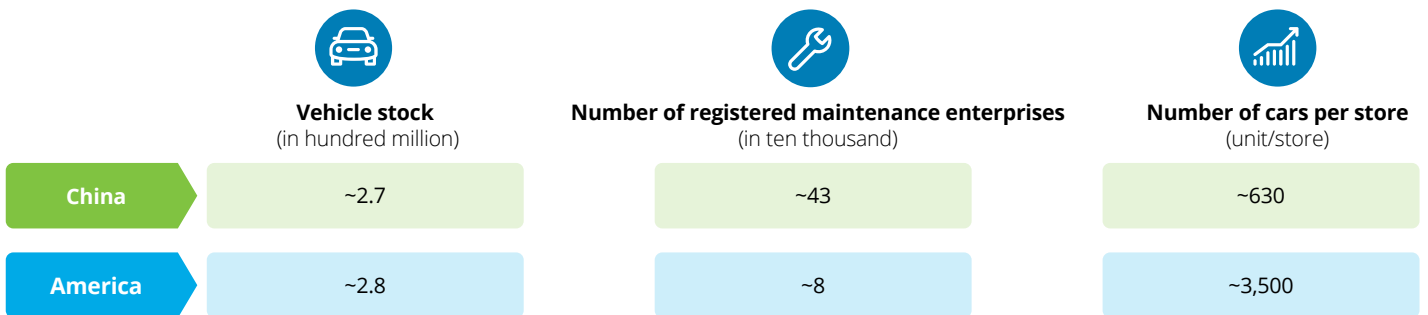
Low profitability resulted from excessive competition.

Low industry admittance threshold caused that China's aftermarket began to enter a status of increasing competition and excess of supply over demand before and after 2015. Horizontally, the average auto maintenance quantity per store in China's auto maintenance market is far behind America. Intense industrial competition resulted in the low average customer size per store and the difficulty in improving asset efficiency, reflecting a slim profit margin in the whole industry. Furthermore, long-term price competition arising from the imbalance between supply and demand is another disaster to the profit margin of the industry.

Lack of integrity in the industry/Difficulty in resolving crisis of confidence.

In a market where long-term excessive competition exists, a number of merchants use low-quality or even fake parts to keep their profits and, with high consumer rights protection costs, the unhealthy tendencies of some merchants cannot be effectively suppressed, which has led to the "bad" money's driving out "good" money, and the industry is facing a serious crisis of confidence. In the meantime, the industry is generally lacking of price transparency and service process transparency, and the Chinese consumers themselves have little knowledge about automobiles, resulting in difficulty in resolving crisis of confidence or building customers who are willing to provide their contact information.

Figure 1.1-4: Comparison of Auto Maintenance Quantity per Store between China and America



Source: China Association of Automobile Manufactures, Expert Interviews, Deloitte Research

According to *Analysis of Complaints Accepted by China Consumers Association in 2019* published by China Consumers Association, 821,377 consumer complaints were accepted by the Association last year, increasing by 7.76% on a year-on-year basis, and 614,246 complaints were settled, accounting for 75% of the total complaints. Among which, there were 34,335 complaints about automobiles and parts, accounting for 4.2% of the total, greatly surpassing the number of complaints from other industries and ranking "top" of all complaints. And among the complaints about automobiles and parts, the following have become the hot spots of consumer complaints:

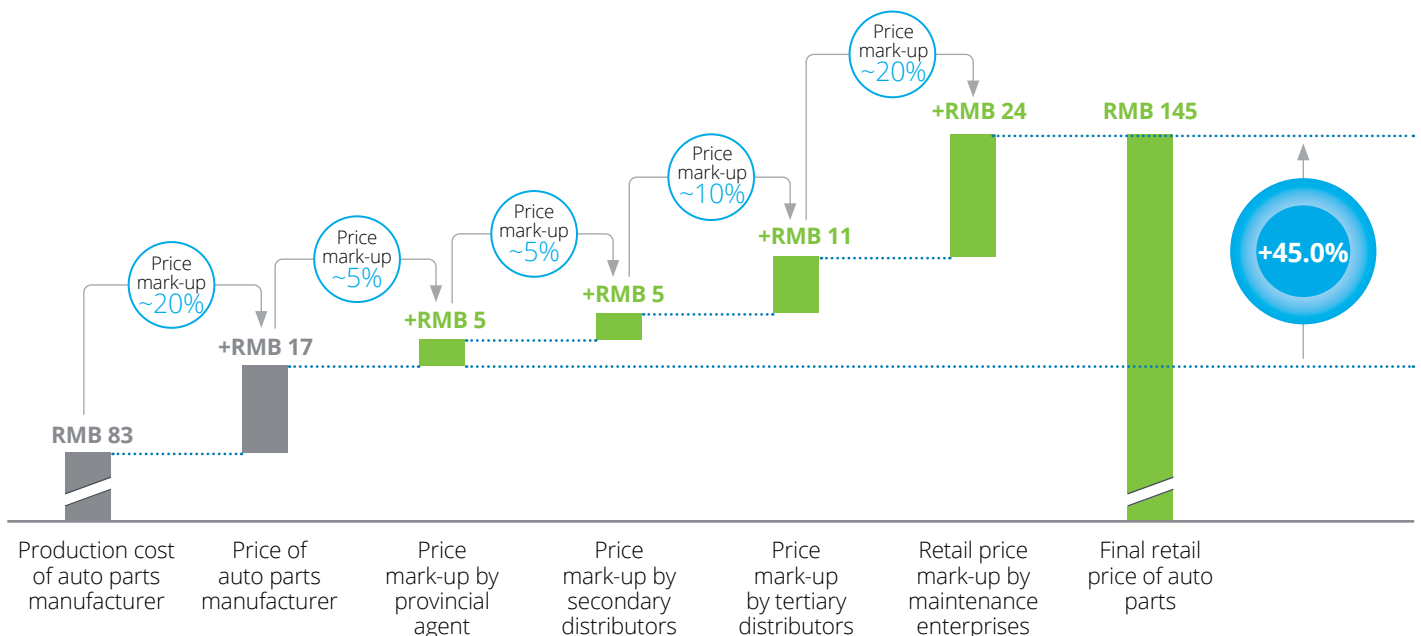
- 01. Product quality issues, and most of the complaints focused on auto parts;
- 02. After-sale service issues, for example, failure in resolving the breakdowns at one time, rework is needed, or breakdowns cannot be completely removed after multiple maintenances, or no details are given about the maintenances, etc.

03. Difficulty in providing proof for detection. Once quality issues of automobiles, parts and services appear, it is difficult for consumers to prove, identify or claim for compensation.

Low efficiency of traditional supply chain model.

For a long time, China's auto parts supply chain has been adopting a regional multi-layer distribution model, with numerous intermediate and highly-fragmented links, low level of informatization and standardization, high circulation costs, and low supply chain efficiency. Under the multi-level mark-up model, consumers have to pay for both virtual-high prices and low efficiency. In addition, the supply chain market is insufficiently regulated, distributors purchase automobiles or parts from chaotic channels, with many other issues such as fake goods or low-grade quality existed, etc.

Figure 1.1-5: Diagram of turnover advance rates for auto parts under the model of traditional multi-level distribution



Source: Interview with industry experts, sorted by Deloitte

"From the distribution stage to the chain stage and then to the e-commerce stage, multiple distributors or chains were needed in the intermediate link between the manufacturer and the distributors or direct consumers. However, after entering the e-commerce model, only one e-commerce platform is needed in the link. It will reduce the combined mark-up percentage of multi-layer distribution model ranging from 25%~40% and the average mark-up percentage of terminal service providers ranging from 15%~25% to the mark-up percentage of self-run e-commerce B2C model ranging from 7%~10%, which is a rare market opportunity for most enterprises in the industrial chain."

Senior business executive of ZC Part
Zhang Houqi

It can be seen that in the domestic market, the average mark-up percentage of spare parts (from the factory to the consumer end) is relatively high under the multi-layer distribution model, end consumers always need to pay high costs to purchase the parts and the channel flattening has a great demand space as a result.

Worsen "talent shortage" issue. The social status and salary level of auto repair technicians have been low for a long time, resulting in the gradual decline in the attractiveness of talents. And, there is still a serious supply-demand mismatch between the current auto repair training & education system and the actual employment demand, making it difficult to meet the demand for large number of high-quality talents.

Low management level. Among the large number of participants in the aftermarket, except for some leading digital smart retail platform, the development of a large number of enterprises is still not satisfactory in terms of normalization, standardization and digitization. Why? The answer is that in addition to the aforementioned constraints of industrial practitioners, low profitability and investors' low perception of management value have also led to insufficient informatization degree and input in the industry, which has greatly affected the improvement of management efficiency and set another obstacle for the scale development of the industry.

1.2 Well-grounded "aftermarket" that shines brightly: China auto market has a bright future and will continue to grow at a high rate in the next ten years

Market-end: The momentum of long-term growth of new auto sales remains and the stock has reached the top in the world, promoting the aftermarket to become a long-term focus

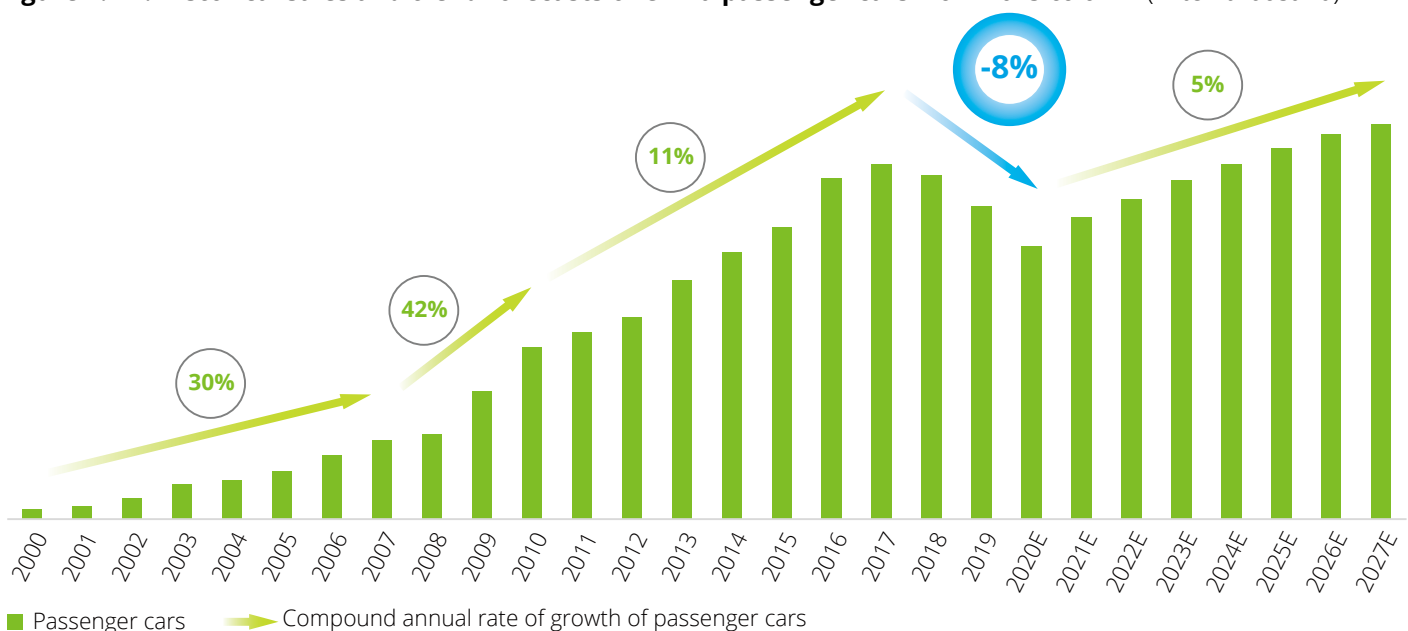
The epidemic has pressured the production and sales of new automobiles in the short term, but the momentum of long-term growth remains. China's auto market was hit heavily by the outbreak of COVID-19 epidemic earlier this year, but thanks to the strong prevention and control measures taken and fiscal and monetary stimulus policies issued by Chinese government, as well as local governments' introduction of a series of measures to stabilize consumption, such as subsidies for new auto purchases (replacement), China's auto market has achieved positive year-on-year growth for five consecutive months since May 2020, showing obvious signs of recovery.

The short-term fluctuations caused by the epidemic will be removed over time, and the market should not ignore the long-term structural factors. The Chinese auto market has been in a 22-month recession since the middle of 2018, during which the auto market showed obvious structural

characteristics: firstly, the demand for replacement and purchasing for another cars exceeds the purchase of the first car, which becomes the main sales force in the passenger car market; secondly, the sales volume of luxury cars is rising steadily and the penetration rate is increasing continuously; however, the market share of the middle and low-end market, especially the passenger cars priced below RMB 80,000, has been shrinking rapidly¹, which has also led to the sharp decline of the market share of self-owned brands. The structural characteristics of passenger car market reflect the trend of social consumption upgrading and consumption downgrading in China.

The sales growth of China's auto market is likely to slow down over the next five years as the demand for car replacement replaces that for purchase of the first car. As expected by Deloitte, the sales level in 2019 will not be reached at least until 2022, and in the long run, the high-growth era of new car sales market is gone forever, indicating that the auto market will shift from an incremental market to a stock market.

Figure 1.2-1: Historical sales and trend forecasts of China passenger cars from 2015 to 017E (in ten thousand)



Source: IHS, Deloitte Analysis

1. CPCA, <http://www.cpcauto.com/newslst.asp?types=csjd&id=10877>

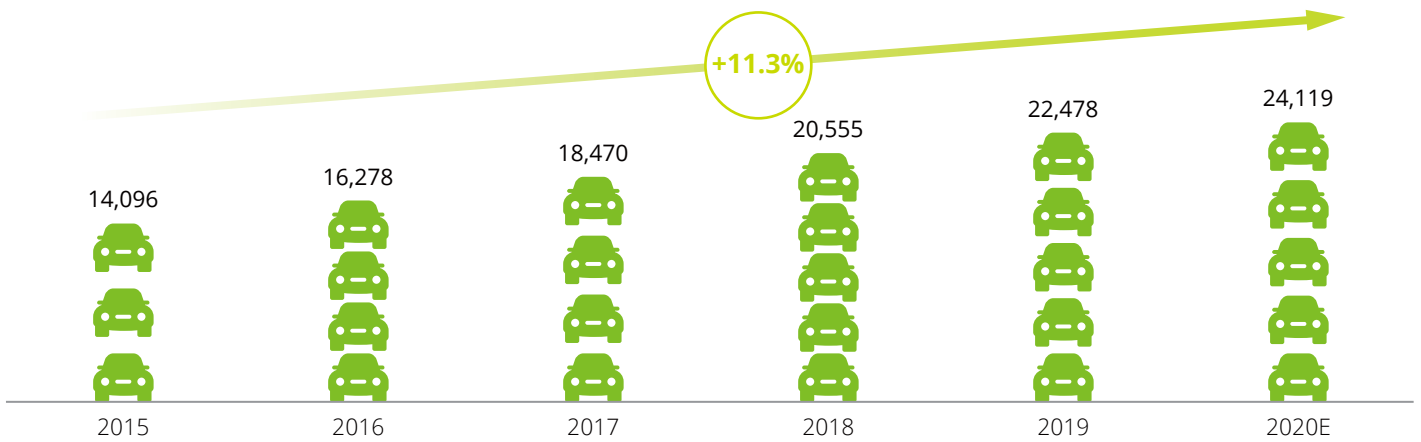
Although the growth of electric auto market is fast, but in the short and medium term, the market is still dominated by fuel autos. Although the passenger car sales as a whole are no longer growing at a high rate, but the new energy autos have entered the periodic outbreak eve after experiencing a rapid reshuffle cycle. And, in the medium to long term and in accordance with the guidance of the State Council on Planning for the Development of the New Energy Automobile Industry (2021-2035), with the further development of the "New Four Modernizations", new energy autos are expected to account for 20% of the sales volume by 2025. However, from the perspective of the overall market structure, the market will still be dominated by fuel automobiles in the next five to ten years, and the population of fuel automobiles in the market will remain stable.

The stock has reached the top in the world, and the aftermarket becomes the long-term focus.

The steady growth of vehicle stock and the gradual aging of auto age structure provide a good foundation for the medium and long-term development of the aftermarket. As of June 2020, China's vehicle stock had reached 270 million, further accelerating its challenge to the United States, the single market with the largest stock in the world (as of the first half of 2020, the vehicle stock of the United States had reached 280 million).

If the annual average maintenance cost of RMB 4,000 is spent on a single car, the capacity of the domestic after-sale maintenance market is expected to exceed the scale of RMB one trillion. Although the growth of new car market has slowed down, China is still the world's largest new car market, and the capacity of the maintenance market will continue to grow steadily.

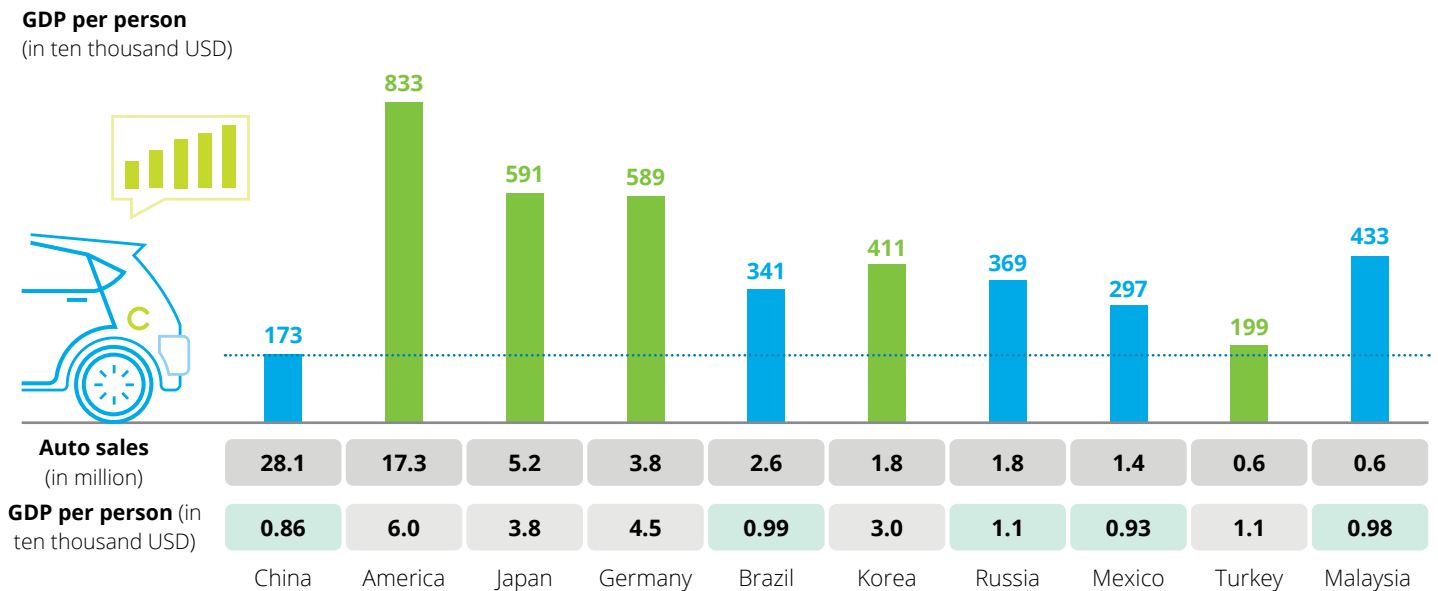
Figure 1.2-2: China's vehicle stock from 2015 to 2020 (in ten thousand)



Source: Transport Administration of Public Security Ministry, HIS, Deloitte Analysis

Furthermore, from the perspective of long-term potential of new car demand, there's a wide gap between the number of cars per thousand people in China and that in mature markets such as Europe and America, Japan and South Korea, or similar emerging markets such as Malaysia, Russia, and Brazil, which also means that there is still plenty of room for growth of the number of cars per thousand people in China in the medium to long term. In addition, the steady growth of the number of drivers has also provided a demand guarantee for the continuous rise of vehicle stock. As of June 2020, the number of car drivers in China has reached 400 million.

Figure 1.2-3: Comparison of the number of cars per thousand people in China market and those in developed and emerging markets²



- Countries such as Brazil and Russia reach at a roughly similar level of vehicle stock per thousand people in in China when arriving at China's current level of GDP per person for the first time
- The countries above experienced economic downturn to some extent near year 2015, during which their auto sales were dwindling and the growth of number of cars per thousand people were slowing down

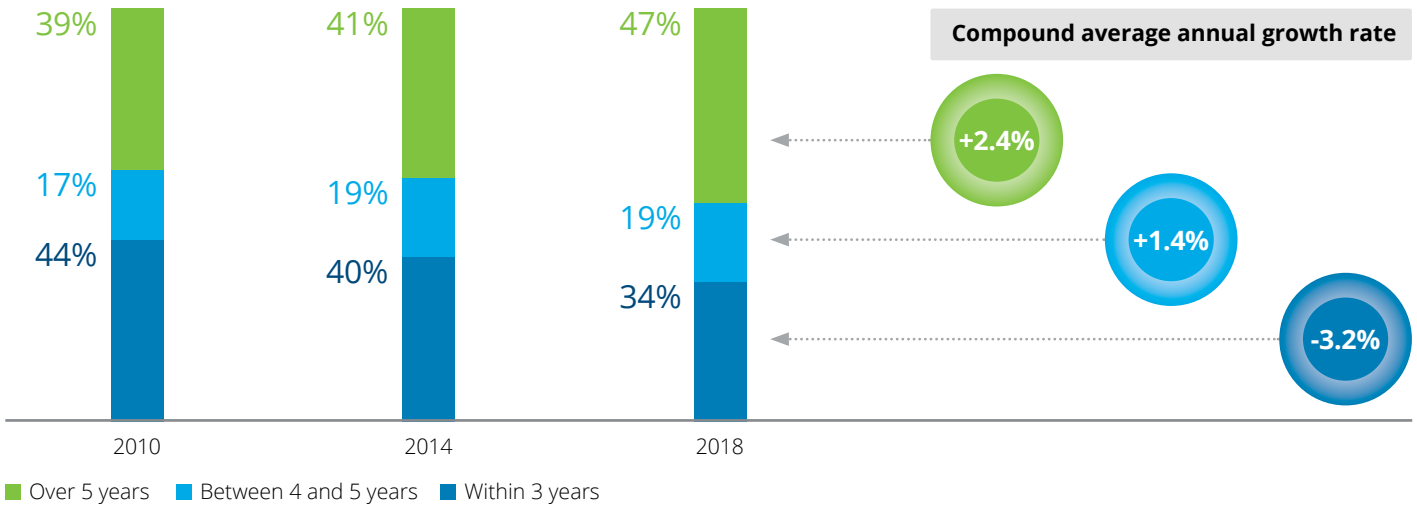
Source: World Bank, Automobile Industry Association of those countries, and public information

The aging of car further accelerates the loss from 4S store system, which is good for the development of the third-party maintenance industry. According to the statistics of Traffic Management Bureau of the Ministry of Public Security, the proportion of autos with a service life of more than five years increased year by year from 2010 to 2018, which has risen from 39% to 47%. The growth of car age, on the one hand, will directly bring more maintenance

demand, but on the other hand, as the age of cars exceeds warranty period, consumers will gradually reduce their dependence on 4S store system and turn to independent aftermarket service providers, creating good conditions for the development of the overall aftermarket, especially the independent aftermarket.

2. Note: The data above are all derived from year 2018

Figure 1.2-4: Analysis of age structure of vehicle stock market in China from 2010 to 2018



Source: Transport Administration of Public Security Ministry, Essence Securities Research Center

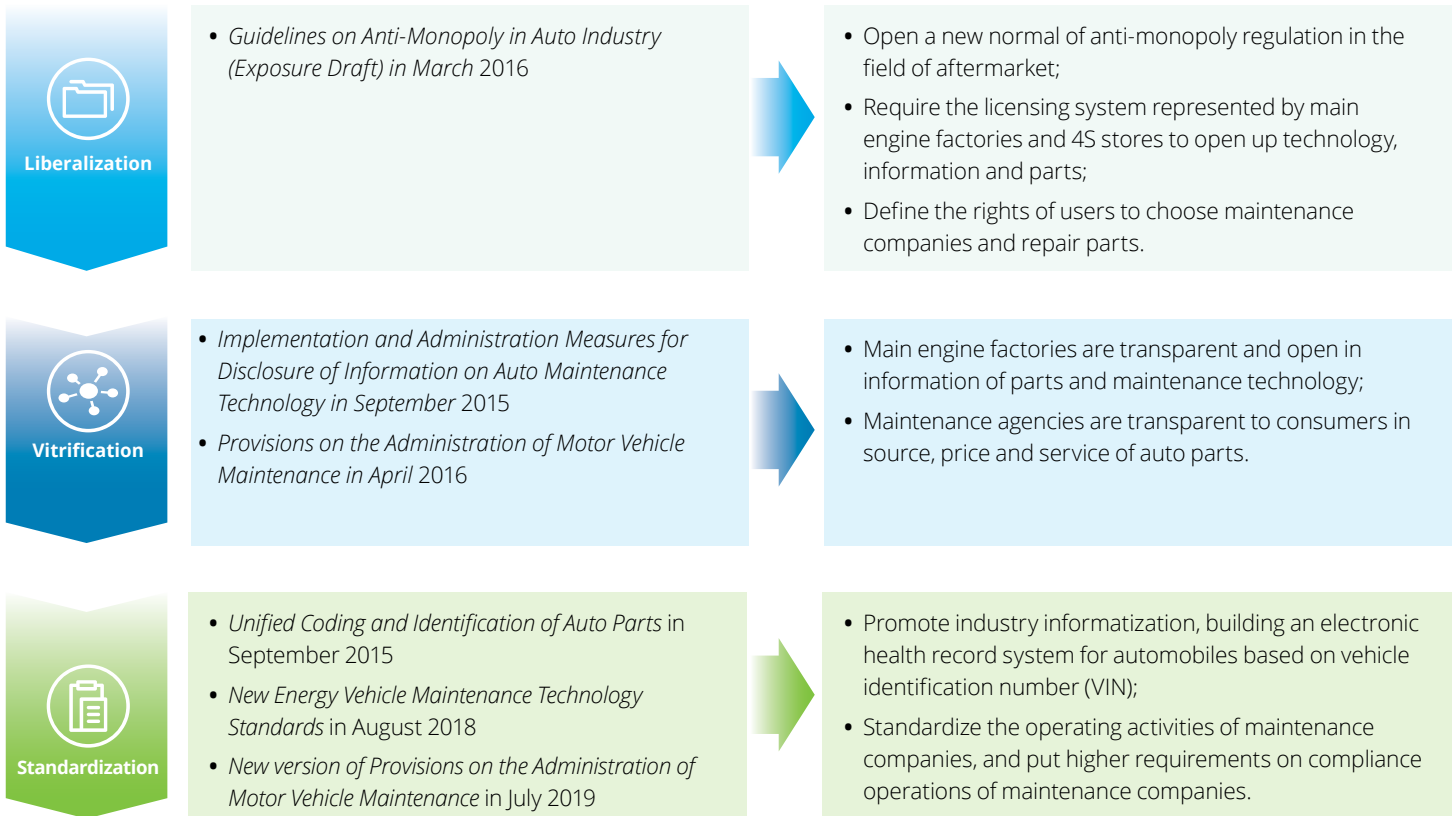
Policy-end: There was no policy issued in the earlier stage. New policies have been frequently issued recently but the implementation effect needs to be further improved

Increasing attentions are given to policy-end of China's automobile aftermarket, with supporting policies introduced frequently.

Before 2014, China's auto maintenance industry was in a state of relative lack of supporting policies for a long period of time. However, Guiding Opinions of the Ministry of Transport, the National Development and Reform Commission, the State Administration for Industry and Commerce, the Quality and Technology Supervision Bureau and Six Other Departments on Promoting the

Transformation and Upgrading of the Vehicle Maintenance Industry to Improve Service Quality was issued in 2014, which not only established the important position of automobile maintenance industry in the aftermarket, but also started a cycle of government guidance, regulation and supervision on the development of maintenance and repair industry. Since 2015, relevant policies have been introduced by various departments, involving all links of the industrial chain and various interest groups and aiming at guiding the industry to develop in a fair, healthy, orderly and innovative way. We may identify from a review of the detailed policies on auto aftermarket in the past five years that the regulation mainly focuses on three regulation ideas and directions: **openness, transparency and standardization.**

Figure 1.2-5: Keywords and influence orientation of policies on auto maintenance industry since 2015



Source: Official website of relevant government departments, Deloitte Research

Openness: The **Guide to Anti-Monopoly in the Field of Automobile Industry (Consultation Paper)** issued by National Development and Reform Commission in 2016 best reflects the open thinking of policies, which opens a new normal of anti-monopoly regulation in the field of aftermarket, and provides policy basis for subsequent supporting policies and anti-monopoly law enforcement. The Guide to Anti-monopoly requires the licensing system represented by main engine factories and 4S stores to open up technology, information and parts, forcing 4S store system to fully enter into market competition, especially in terms of after sales. By opening up the circulation of the original parts, cultivating the self-owned-brand parts and providing supports for the independent maintenance system, it is able to promote the development of auto parts industry and maintenance industry in China.

Transparency: The policies on transparency and openness complement each other. Transparency is mainly reflected in two aspects: firstly, main engine factories are always required to be transparent and open in information of parts and maintenance technology, which shall be detailed to model and purchase channel of overhaul equipment, trademarks, number and purchase channel of parts, etc.; secondly, maintenance agencies (including 4S stores and independent after-sales agencies) are required to be transparent to end consumers in source, price and service of auto parts. The **Measures for the Implementation and Administration of the Disclosure of the Information about the Automobile Maintenance Technology** issued in 2015 and the **Provisions on the Administration of Motor Vehicle Maintenance** issued in 2016 both reflect such policy orientation.

Standardization: Standardization is another guiding direction of policies on aftermarket industry, which can be embodied in the construction of industry informatization, the establishment of service standardization and the restriction and supervision on operating activities of after-sales enterprises. Firstly, regarding information construction, the Ministry of Communications has carried out nationwide pilot work of building an electronic health record system for automobiles based on vehicle identification number (VIN) since 2016, which has been led and promoted by traffic management departments at all levels. The **Provisions on the Administration of Motor Vehicle Maintenance** issued in July 2019 has further

However, we should treat the policies rationally as well. At present, industrial policies play a guiding role primarily, and the implementation and deepening of high-quality development still need to be promoted by the industry itself. In particular, leading enterprises should set an example in policy guidance to promote the healthy and orderly development of the industry.

strengthened the regulation on building of the electronic health record system.

Secondly, as for guidance on standardization of operating activities of maintenance enterprises, the **Provisions on the Administration of Motor Vehicle Maintenance** revised for the third time provides a detailed regulatory demonstration, further clarified the standardized actions and penalties, and promoted the standardization of the industry.

"The support for policies is significantly enhanced, but in the market where automobile maintenance industry itself is not greatly driven by resources and policies, what the industry needs more is the improvement of endogenous development quality, which depends heavily on the excellent enterprises' changing the development direction of the industry. However, I believe that with the maturity of technology and market, excellent and high-quality enterprises will gradually emerge to lead the market for making a change."

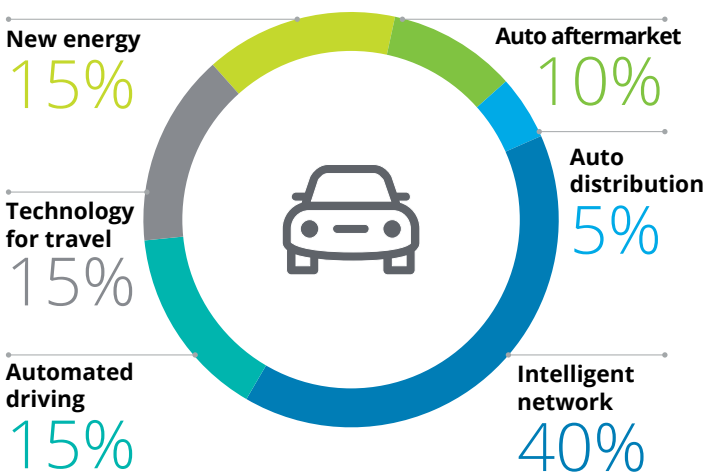
Secretary-general of China Automotive Maintenance and Repair Trade Association Auto Repair Parts Committee
Zhang Xuehui

Capital-end: It is still a capital-focused track, but with reduced heat, and the selection of segmented tracks tends to be more rational.

As the continuous development of aftermarket, which has always been a key focus of capital, the overall attitude of capital to the auto aftermarket has cooled down to a certain degree, and the frequency and scale of the financing of aftermarket enterprises began to show a shrinking tendency compared with the hot segmented tracks of the new auto market, such as Ridesharing, Autopilot, and Intelligent Network, based on the financing situation of the auto travel field in recent years. The shrinkage of capital-end has also further stepped up the pace of industry reshuffle and the survival of the fittest, and promoted the maturity of the business model and the improvement of the overall development quality of the industry.

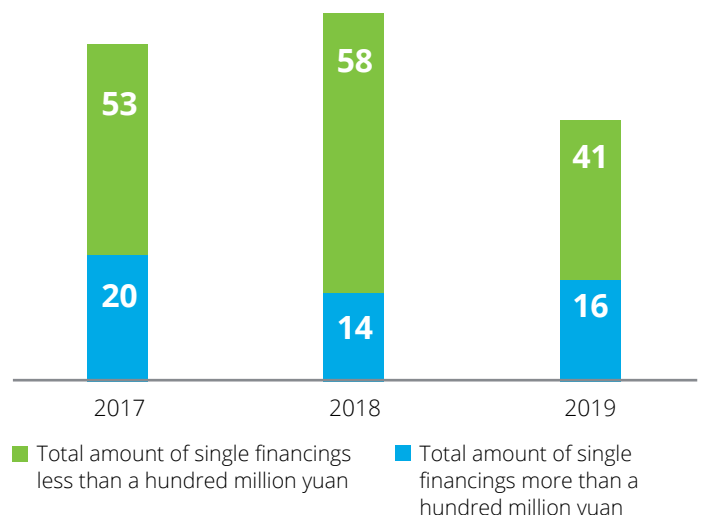
The industrial investment tends to be more rational, with a significant decrease in total amount. In respect of the track investment trend in the specific aftermarket, the investment style of the investors is different from the flourishing and daring style in previous years. Starting from 2019, the selection of tracks tends to be more rational, and it is no longer necessary to pay for the business model of seeking new and different, but instead, the feasibility of business logic and key performance indicators of enterprises are more objectively and calmly reviewed, and the objects with clear business models and sustainable development potential are looked for investment. Therefore, in respect of the investment attitude in capital market, the scale of capital has been reduced and the selection of tracks has become more and more serious. In terms of segmented tracks, the auto parts supply chain has gradually been favoured by capital and has developed rapidly in recent years, which is closely related to the gradual development of the Industrial Internet and the clarity of the business model of auto parts supply chain.

Figure1.2-6: Financing Proportion of Segmented Industries in Auto Travel Field in 2019



Source: Monthly summary of financing in auto industry by www.iyiou.com, <http://legacy.iyiou.com/p/121678.html>

Figure1.2-7: Number of segmented financing for auto aftermarket in China by the amount of financing



1.3 Macro opportunities of China's auto aftermarket maintenance industry: A treasure in perilous peak, attracting countless investors, digital and customer-oriented thought or the key to unlock the treasure

There are many pain points in the market, but the existence of these pain points also means that there are huge development opportunities in the industry. The new and old enterprises inside and outside the industry have also tried their best to promote the industry change from the pain points. The reason why the market has been transformed so rapidly in recent years, Deloitte believes that an important driving factor is that the development of digital technology has reached a position that can relatively support the transformation. The traditional pain points are expected to be improved with high quality, great efficiency and scale effect through digital technology, and the key to the success of future industry change lies in the persons who can use digital technology and based on the deep understanding of the industry to complete the deep match of digitization and business.

The final consumers of aftermarket, the auto owners, are the terminal value of all changes. Digitization is the key tool for the change, however, how the industry moves from the logic of past selfish departmentalism and accessories sales to the consumer-oriented business thought in the real sense is the most important means to conquer the market, which is also a major change in the underlying business logic. So what are the current trends and preferences of the customers in the aftermarket? Based on some quantitative data, this paper offers a few commonplace remarks by way of introduction so that the readers may come up with more valuable opinions to better understand the consumer characteristics of the current aftermarket.



Chapter II

More reliable, plentiful
and convenient: image
of consumers in China's
auto maintenance market

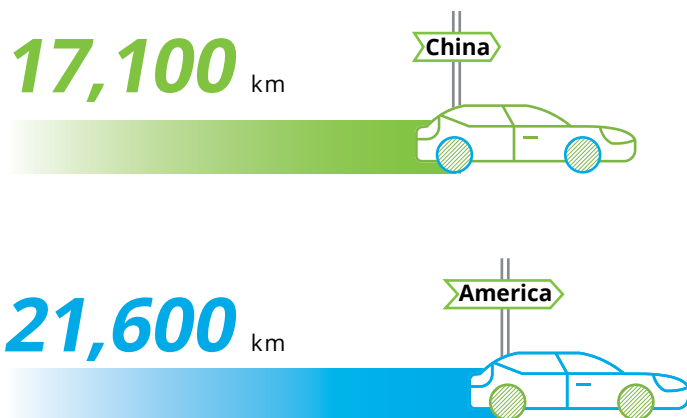


2.1 The unique characteristics of China market make the consumers expect a transparent, hassle-free and convenient consumption experience

Basic characteristics of Chinese consumers

"Less driving": Low intensity of car use. The use of cars by Chinese consumers is mainly focused on short trips within the city, such as commuting. The average annual mileage of autos in China obviously lags behind the United States. Besides, it should be noted that the number of cars per thousand people of the United States is currently more than four times of that of China (United States: 833v.s. China: 173v.s.)³, and its average annual mileage is still significantly higher than that of China, which further demonstrates that the frequency of auto use by Chinese consumers is still much lower than the mature markets like the United States.

Figure 2.1-1: Comparison of Average Annual Mileage between China and America



Source: Industry expert interview, sorted by Deloitte

"Little knowledge about autos": Lack of knowledge about autos. China's auto industry started late and had a short history, and the gap between China and the developed countries in Europe and the United States is obvious. Take the United States as an example, it already had a history of 120 years since the first auto expo in 1900, while it has been only 20 to 30 years since autos, especially private autos, entered the Chinese market. Therefore, the Chinese consumers' knowledge about autos is generally less than that of American consumers. With the prevalence of the sharing economy, the lack of knowledge about the auto product itself is difficult to be changed in the long run.

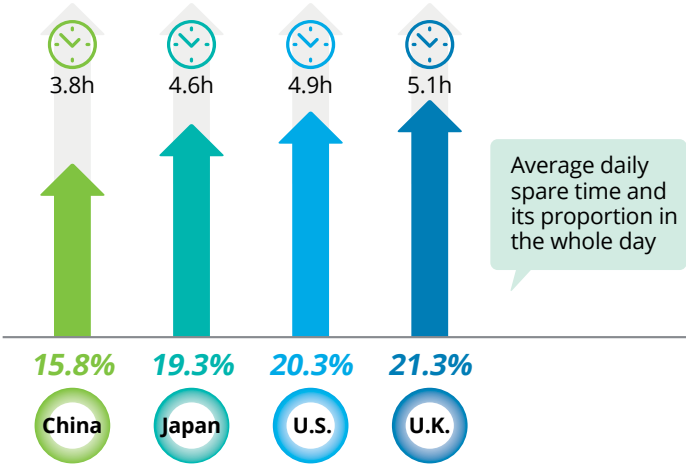
"Consumer product": The attitude towards consumption of autos is relatively sensitive. The low frequency of auto use and lack of knowledge about autos among Chinese consumers has determined that their attitudes towards the consumption of autos are more inclined to consumer products, the consumption decisions made are more sensitive and more attention is paid to brands. In contrast, the consumers in the United States, who have high frequency of auto use and rich knowledge about autos, usually regard autos as durable goods and transportation tools and their choices tend to be more rational.

3. Deloitte Analysis: Number of cars per thousand people = Number of cars/Total population of the country*1000

Note: The "auto maintenance market" mentioned here refers to the auto inspection, repair and maintenance market.

"Lack of time": More willing to pay for convenient services. Compared with the developed countries in Europe and the United States, the daily spare time of China's workforce is obviously less, their pace of life is generally faster and their desire for convenience is stronger. At the same time, with the demographic dividend of China, the cost of services is relatively low, and the trend of outsourcing of life services is gradually strengthened. Therefore, the Chinese consumers are more willing to pay for convenient and fast services in maintenance of autos.

Figure 2.1-2: Analysis of Average Daily Spare Time and its Proportion in the Whole Day: China, Japan, U.S., U.K.



Source: OECD, Survey Report on Chinese Leisure Status from National Tourism Administration

Demand Trends of Chinese Consumers

Quality assurance: Pursuit of quality

The authorized 4S channels have occupied the core leading position in China's auto maintenance market for quite a long time, which shows that Chinese consumers are still very concerned about the quality of services, and the special background of the trust crisis has also deepened Chinese consumers' pursuit of quality. The positioning of "genuine products" and "quality assurance", which is difficult to become core competitiveness in mature markets, is still one of the core demands of Chinese consumers at the current stage in Chinese market.

One-stop convenience: In favor of one-stop comprehensive services

Unlike the European and American markets, where consumers prefer vertical segmented services, Chinese consumers prefer one-stop comprehensive services. The main reason is that Chinese consumers do not know enough about autos, and the knowledge threshold for

vertical service channels is too high for a large number of consumers. In addition, the trust crisis in the industry has made consumers tired of the process of re-establishing trust again and again, as they prefer to establish a trust relationship with a certain store or brand at a low cost and expect to receive more diversified one-stop services.

Comfortable experience: The experience economy is coming

With the increase of disposable income of Chinese residents and the driving force of consumption brought about by digitalization, China has entered a new era of all-round upgrading of consumption, in which the experience of Chinese consumers is changing from consumption of single goods consumption to experience consumption, and from focusing on price, function and brand to focusing on consumption process. Consumers' expectations and demands for maintenance appointments, online and offline integration experience, and offline service experience are gradually raised.



Money saving: Focus more on cost performance than low cost

Under the unique business environment and consumer culture of China, consumers have a natural enthusiasm for the pursuit of cost performance, and this is also the case in the maintenance market. At the same time, due to the constant decline in the market price of autos, and the plebification and popularization of auto consumption, the per capita payment ability and willingness of the target clients in the auto aftermarket have decreased to a certain degree, which further strengthens the pursuit for the cost performance of auto parts and services.

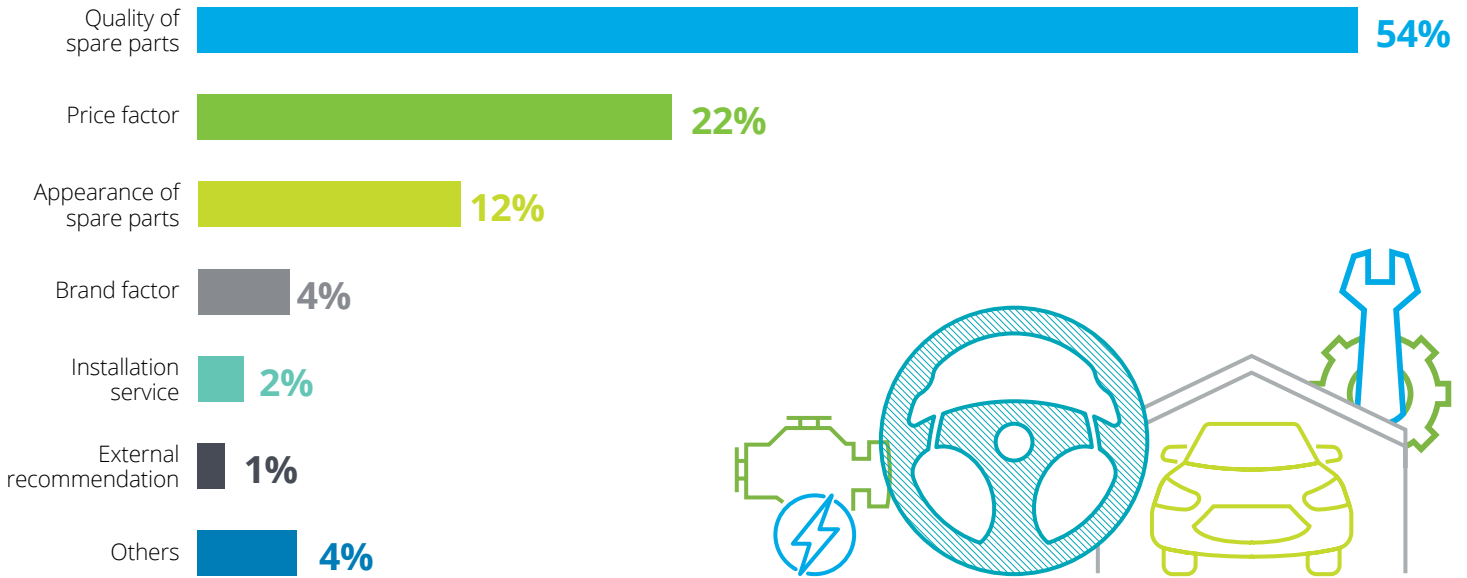
Convenience: High on-line rate

The long working hours of China's workforce and the continuing demographic dividend have kept the cost of social services low, and Chinese consumers have an extreme pursuit for convenience of services, which is the main reason why they prefer convenient outsourcing services such as online consumption, express delivery and mobile payment.

According to the statistics of China Internet Network Information Center, 88% of millennials in China store online once a week, and the penetration rate of mobile internet accounts for 99.1% of all internet users. The transactions paid via mobile phones in China was approximately US\$50 trillion in 2019, almost 500 times of the amount in the United States.⁴ In the auto maintenance market, Chinese consumers are more willing to embrace digitalization to obtain the maintenance information and service experience with higher quality and efficiency. The digital touchpoints provide differentiated opportunities for the highly competitive auto aftermarket.

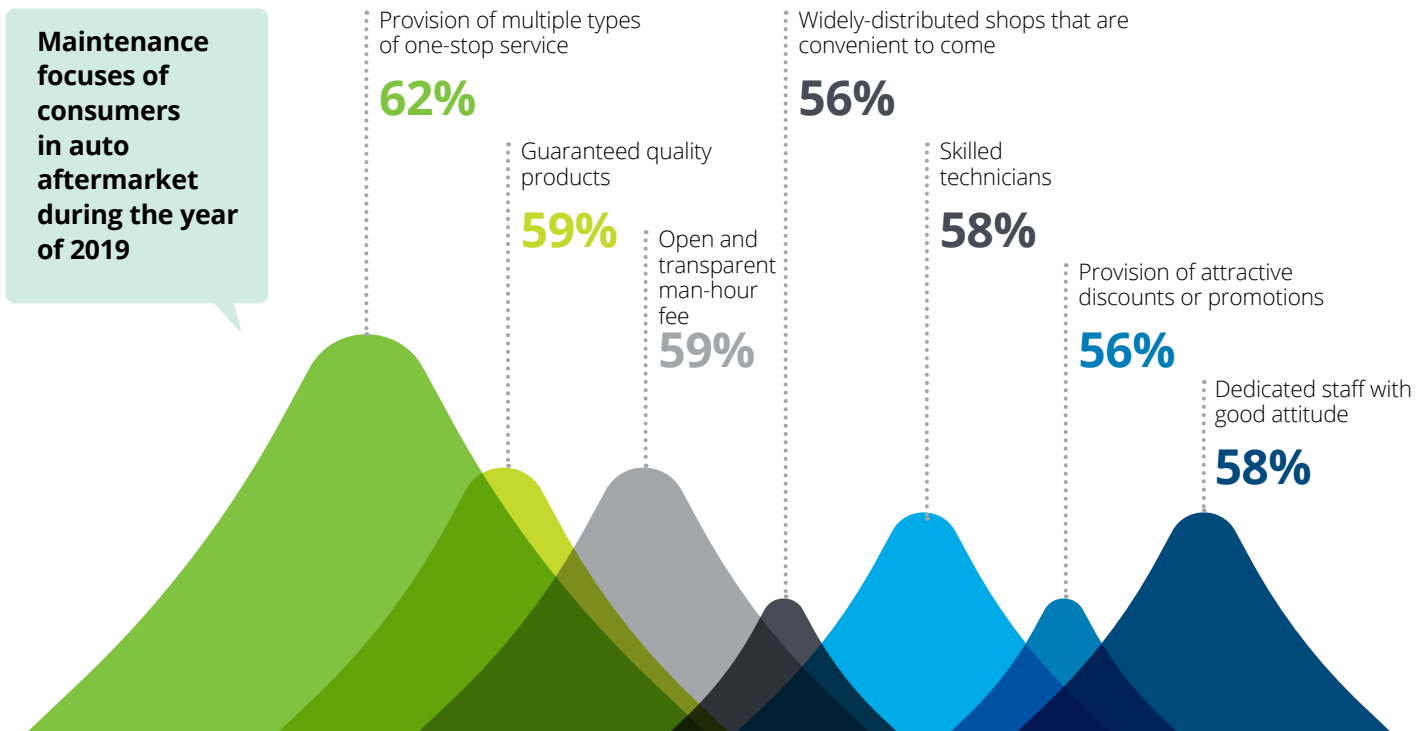
4. Source: The 46th "Statistical Reports on Internet Development in China" of China Internet Network Information Center (CNNIC)

Figure 2.1-3: Analysis of Decision Factors on Consumers' Selection of Spare Parts



Source: Researched and sorted by Deloitte

Figure 2.1-4: Maintenance Focuses of Consumers in Auto Aftermarket



Source: Researched and sorted by Deloitte

2.2 Analysis of Online Consumption Characteristics of China Auto Aftermarket Consumers

China is the world's largest online retail market, and the Chinese people are world leaders in online consumption habits. The global online retail sales reached US\$3.5 trillion in 2018, and the top five online retail markets accounted for more than 82% of total online sales, of which China's e-commerce sales increased by more than 30% year-on-year, totalling nearly US\$2 trillion (accounting for more than half of global online retail sales). Online channel has become an important consumption channel for Chinese consumers.⁵ In terms of domestic online retail trends, online retail sales continue to increase at a relatively high growth rate. Although at a slower rate, the absolute growth rate is still much higher than that of the traditional industries. Deloitte believes that the online retail sales and the online rate of retail sector of the Chinese market will be further increased at a relatively high growth rate, which is supported by the following factors:

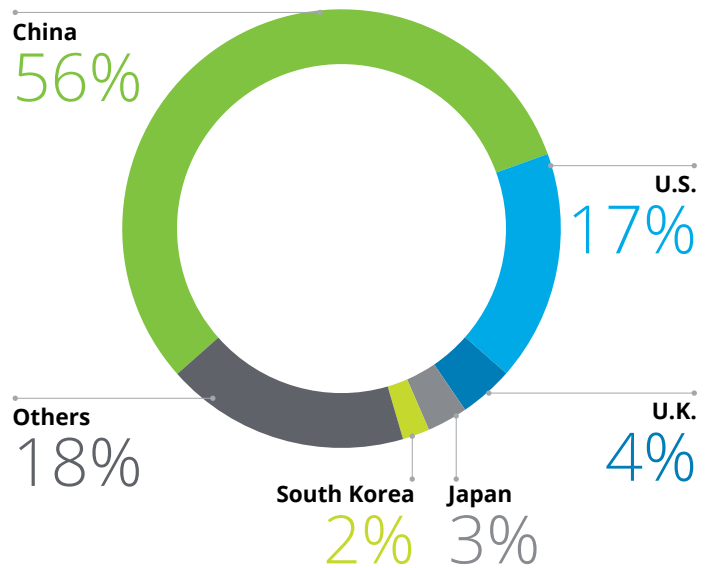
- **The multi-distribution sector of domestic consumer-goods supply chain is complicated, and the cost at the distribution level is high**

The domestic consumer goods generally adopt the model of multi-level distribution, the intermediate cost for the circulation of products has always been high, and the enthusiasm of consumers for e-commerce keeps on rising.

- **The cost of domestic social logistics is high, but the cost of express logistics has a cost advantage over the rest of the world**

The urbanization rate of China's population of 60% is still lower than 80% of the developed countries in Europe and the United States⁶. While the urban population is mainly gathered in core metropolitan area, large cities are densely populated, and the domestic demographic dividend makes labour cost significantly lower than that of the developed countries in Europe and the United States, so that the cost of 2C express industry in China is relatively low. The starting price of express is not more than twenty yuan in China, but the general price in the developed markets in Europe and the United States is more than one hundred. The relatively low express cost is an important driver for the development of domestic e-commerce.

Figure 2.2-1: Proportion of global online retail sales



Source: eMarketer, Global Internet E-commerce Report for 2018, <https://www.emarketer.com>



5. Source: eMarketer, Global Internet E-commerce Report for 2018, <https://www.emarketer.com>

6. Source: "Statistical Communique on the 2019 National Economic and Social Development" issued by China Economic Net,

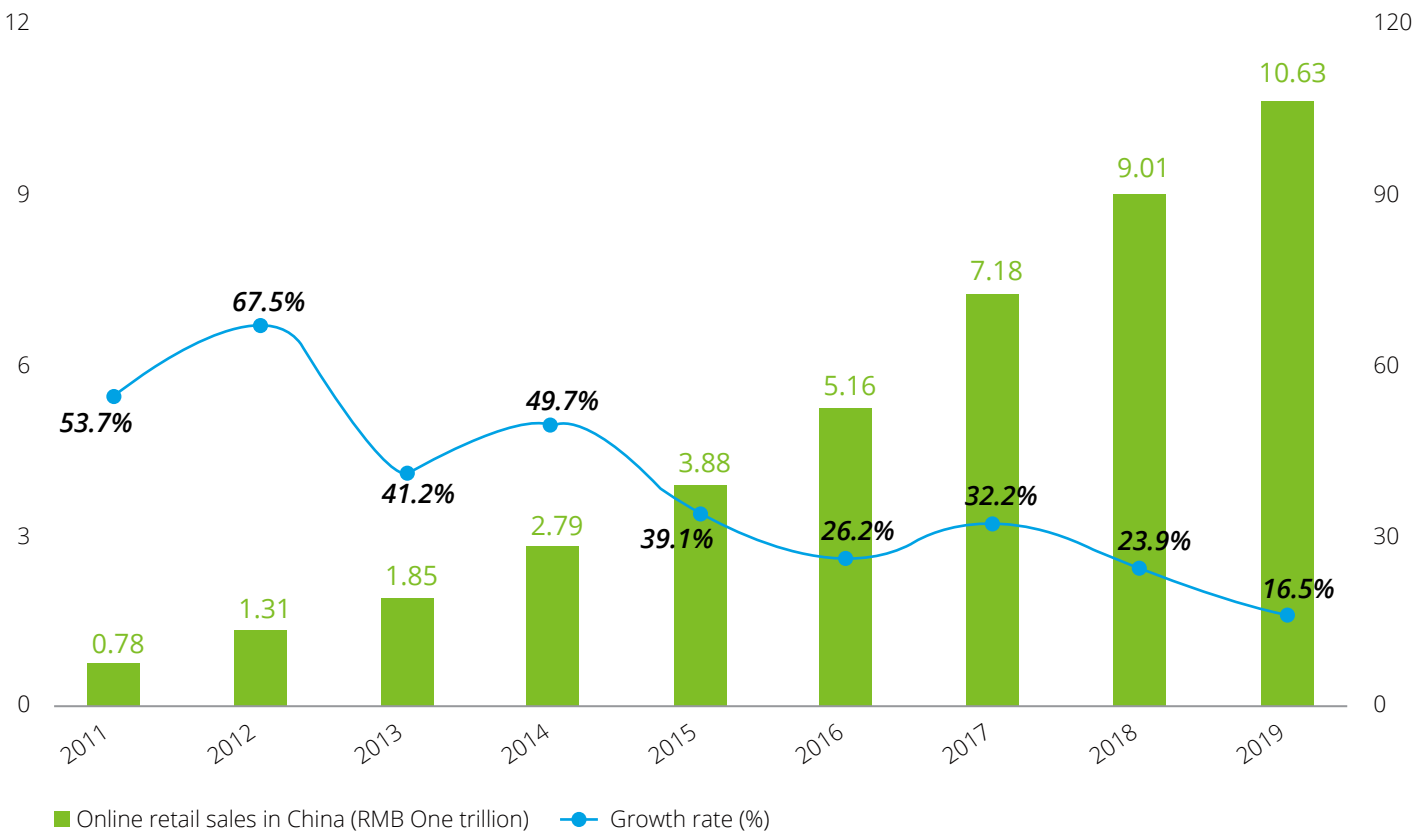
• **The maturity of domestic offline retail is lower than that of the developed markets, and the concentration of offline retail is low**

In the past ten years, the price of domestic lands has continued to grow rapidly, the housing price has remained high, and the rent for stores has also kept on rising, making the development of offline economy more difficult in the domestic market where the development of offline business is not so mature. The number of large shopping malls per capita of China is much lower than that of the developed countries in Europe and the United States, and the richness and maturity of offline business is low, making consumers more willing to accept the rich and high-quality online shopping experience.

Meanwhile, the auto aftermarket also shows a clear online trend. In view of incomplete statistics and industry expert interviews, Deloitte estimated, after modelling, that the online rate of domestic

auto maintenance significantly increased over 22% from 2019 to 2025.⁷ The model of online retail matching offline services of spare parts has become the trend, and the ultimate experience brought about by e-commerce has become a way of life that Chinese consumers cannot get rid of. For the auto maintenance industry, e-commerce has flattened and standardized the supply chain, and the two long-standing problems of high price and too many counterfeit products have finally been improved fundamentally. In addition, the new experience of online purchase and offline assembly of spare parts has greatly enhanced the consumer experience. All of these accelerate the rapid development of the online auto maintenance industry, and consumers' demand for online spare parts and services has become a key topic on which the industry must conduct a study. In this chapter, we will further develop our analysis of the specific needs and trends of domestic consumers in online channels.

Figure 2.2-2: China's Annual Online Retail Sales and its Growth Trend from 2011 to 2019



Source: E-Commerce in China 2019 from Ministry of Commerce, <http://dzsws.mofcom.gov.cn/article/ztxx/ndbg/202007/20200702979478.shtml>

7. Source: Expert interview, calculated and analyzed by Deloitte

Portrait of Online Auto Maintenance Customers

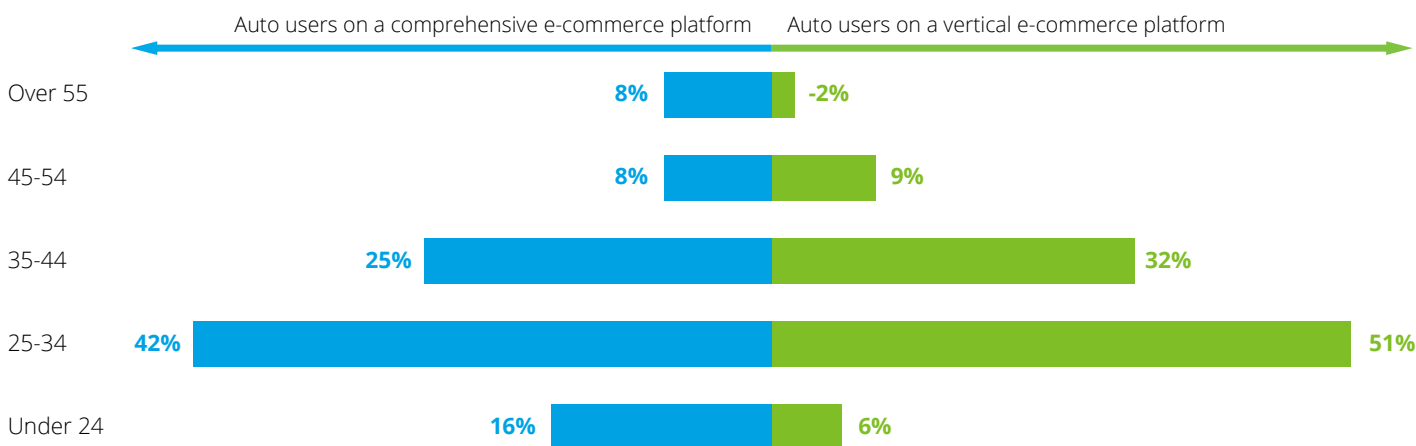
Age of online users is tending younger and female users grow rapidly

In terms of age structure, the age distribution of China's online auto maintenance consumers shows a standard "olive" structure, i.e., mainly the young adults between the ages of 25 and 54 with high consumption ability, accounting for 90% of the total, of which the ages between 25 and 34 account for the highest (up to 50.9%), followed by the ages between 35 and 44 (up to 31.9%), the tendency is distinct.⁸ In terms of genders, although the male consumers play a stable dominant role, the proportion of female consumers, as the main force of online shopping, is growing rapidly in the population of online auto maintenance.

The middle class of society occupies a dominant position, and the price of autos is generally between RMB 100,000 and 200,000

Based on the factors such as the price of the autos and the brand of mobile phones of the online users, it can be found that middle-class consumers are the main force of online auto maintenance group: they drive mid-priced autos (100,000-200,000), use iPhone or Huawei mobile phones, and like to browse online auto maintenance platforms when they have spare time in the day.

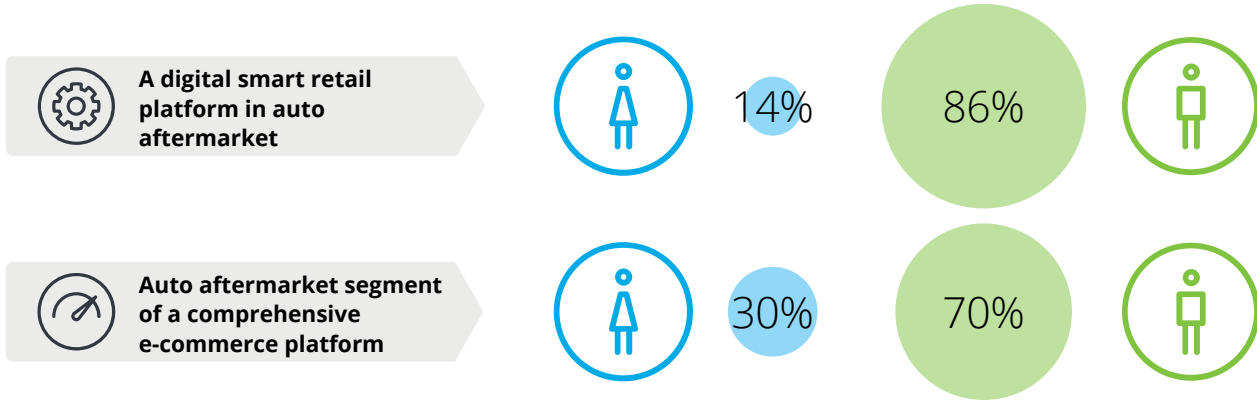
Figure: 2.2-3: Age Structure of Online Auto Maintenance Consumers in 2019 (%)



Source of data: Researched and sorted by Deloitte

8. Source of data: Researched and sorted by Deloitte

Figure: 2.2-4: Gender Structure of Online Auto Maintenance Consumers in 2019 (%)



Source of data: Researched and sorted by Deloitte

Analysis of online auto maintenance market consumption behavior

Users with auto age of over 4 years are more concerned about cost-performance ratio, and therefore the absolute majority of online users

In terms of auto age distribution, the auto age of online users are mainly 4-9 years, accounting for more than 60%. Users with auto age of 0-3 years account for the lowest proportion.⁹ Compared with the users of new auto age, these users tend to complete after-sales service in the OEM 4S network. The psychological constraint of warranty and higher concern for new vehicles make these consumers less sensitive to price and more demanding of quality. However, with the further standardization of anti-monopoly policy and Three Guarantees policy, as well as the further improvement of the quality of the Non-OEM service network, the proportion of users with auto age of 0-3 years is expected to increase further in the future.

Analysis of preference for category of goods purchased online

In terms of overall online auto parts sales, compared with the whole auto parts and accident auto parts, quick-wear parts are absolutely the main force of online retail, and have formed a very considerable sales scale, especially the three highly standardized and branded categories: lubricant, storage battery, and tire. The sales have been far ahead among the top for a long time. Meanwhile, auto-related

products are also an important category of online sales, of which the hot-sale products are mainly various car additives, car-mounted 3C electronic products, car accessories, etc.

In terms of maintenance cycle of store customers, over 60% of car owners have their car maintained more than twice a year, over 80% of car owners have their cars maintained at least once every nine months, namely 1-2 times per year, and over 90% of car owners have their cars maintained at least once a year¹⁰, which not only demonstrates that online auto maintenance market customers value auto maintenance, but also indicates the huge potential of auto maintenance market to some extent.

In combination with mileage, the average annual maintenance frequency of cars of different mileages roughly shows a positive correlation to their mileages, namely, the higher the mileage of the car, the higher the annual maintenance frequency, but the growth of frequency is not directly proportional to the growth of mileage, which also demonstrates that the car owners using cars frequently has a rational attitude towards auto maintenance, no longer having their cars maintained according to the mileage instructions. In terms of cost, the highest total cost and single average cost are for customers with the second lowest mileage of 60,000 to 100,000 kilometers and the lowest mileage of 60,000 kilometers respectively, and shows a trend of increasing mileage and decreasing single cost.

9. Source of data: Researched and sorted by Deloitte

Analysis of geographical difference of consumption preference

Due to the vast territory of China, there are great differences in climate, environment and local culture, so are the consumption preferences of online retail auto parts, especially auto products which are not a must. For example,

car owners in Guangzhou and Shenzhen in the south of China lead the country in the number and frequency of antifogging agent purchase, which is closely related to the humid climate and high rainfall. While, in the north, due to the dry climate and dusty air, cars get dirty easily. Therefore car washing tools are very popular in the market.

Figure 2.2-5: Analysis of geographic characteristics of online auto maintenance market customers' needs in 2019



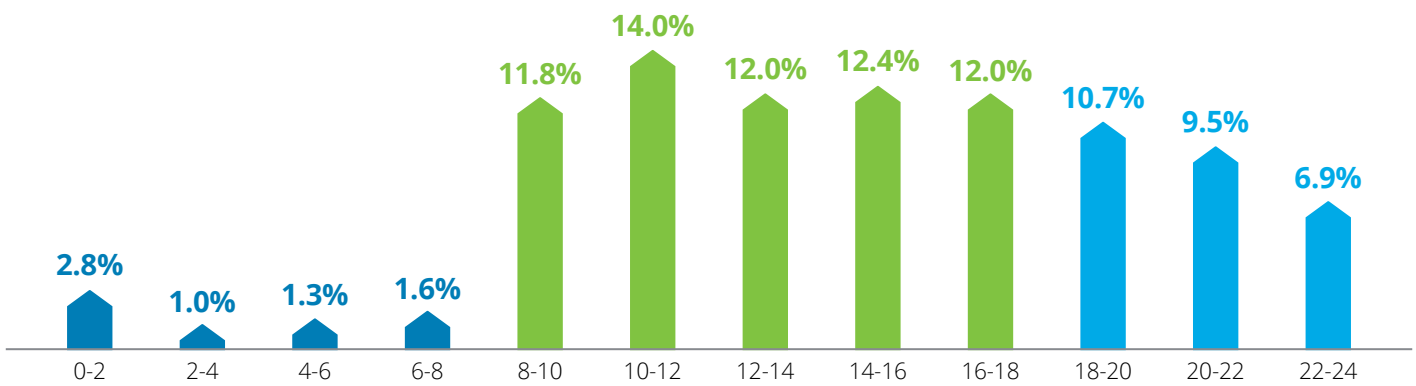
Source of data: Researched and sorted by Deloitte

From the perspective of per customer transaction, cities with higher economic development level generally rank higher. 9 out of the Top 10 cities are first-tier cities and new first-tier cities, and their economic development level is highly consistent with online auto parts purchasing power.

Time Frame Analysis of Online Consuming Behavior

Consumer groups of online auto maintenance applications are generally active in the day time and the percentage of active users in the night time has comparatively decreased.

Figure 2.2-6: Online Active Time Distribution of Online Auto Maintenance Consumers in 2019 (%)



Source of data: Researched and sorted by Deloitte

2.3 Analysis of the consumption trend of online maintenance categories: OBT (engine oil, battery and tire) enjoys a stable position as the largest category, and there is still a huge space for the development of online retail

The growing vehicle stock, the aging auto age structure, increasing auto use frequency and mileage, as well as the change in consumption behaviour and the upgrade of consumer demand are all promoting the development of auto maintenance industry.

Further, from the perspective of subcategory, the retail market of engine oil, battery and tire ("OBT") exceeds RMB 10 billion Yuan. As the core major category of quick-wear parts, "OBT" has earlier transformed from wholesale to fast moving consumer goods ("FMCG") and terminal retail¹. According to Deloitte's estimation, at present, tire has become the single category with the largest market share of auto parts sales network with the e-commerce penetration rate of about 10%,

and it is still growing. Industry experts and practitioners are generally optimistic about the sustainable development of its penetration rate, and it is expected to achieve 50-60% online penetration rate in the long run. Second, engine oil and oil filter have also achieved a high online rate (approximately 7-8%). Third, the online penetration rate of engine oil is about 5%.

Although the online penetration rate of auto maintenance parts is low compared with other consumer goods, there is tremendous potential for rapid growth. It is also inseparable from the Internet economy soil of Chinese characteristics. In the opinion of Deloitte, compared with developed countries in Europe and America, the trend of digitalized and online Chinese maintenance market will be more obvious.

Figure 2.3-1: Comparison of characteristics and online rate of major categories of quick-wear parts

Category	Tire	Engine oil/ oil filter	Accumulator	Air filter	Brake pad	Spark plug	Windscreen wiper
Replacement frequency (annually)	~1-1.5 pcs	~2.4 times	~0.4 times	~0.6 times	~0.2 times	~0.3 times	~0.5 times
Standard product							
Brand cognitive							
Circulation efficiency^[1]							
Online rate	10%	7~8%	5%	<2%	<1%	<1%	<2%

● Higher degree ○ Lower degree

Note 1: Circulation efficiency generally refers to the distribution level, number of channels, complexity of circulation, etc.

Source of data: Dongxing Securities, Research Report in April 2020 Auto Aftermarket Industry: Well-grounded "Aftermarket" that Develops Vigorously

With the integration of upstream supply chains, the simplification of channels and the enhancement of circulation efficiency in the recent years, as well as the positive guidance and empowerment of e-commerce platforms and O2O start-ups to the industry, significant progress has been made in the online rate of auto parts industry. From the perspective of industry segmentation, "OBT" can take the lead in achieving a high e-commerce penetration rate for the following reasons:

First, in terms of products and services, the three categories share the following characteristics:

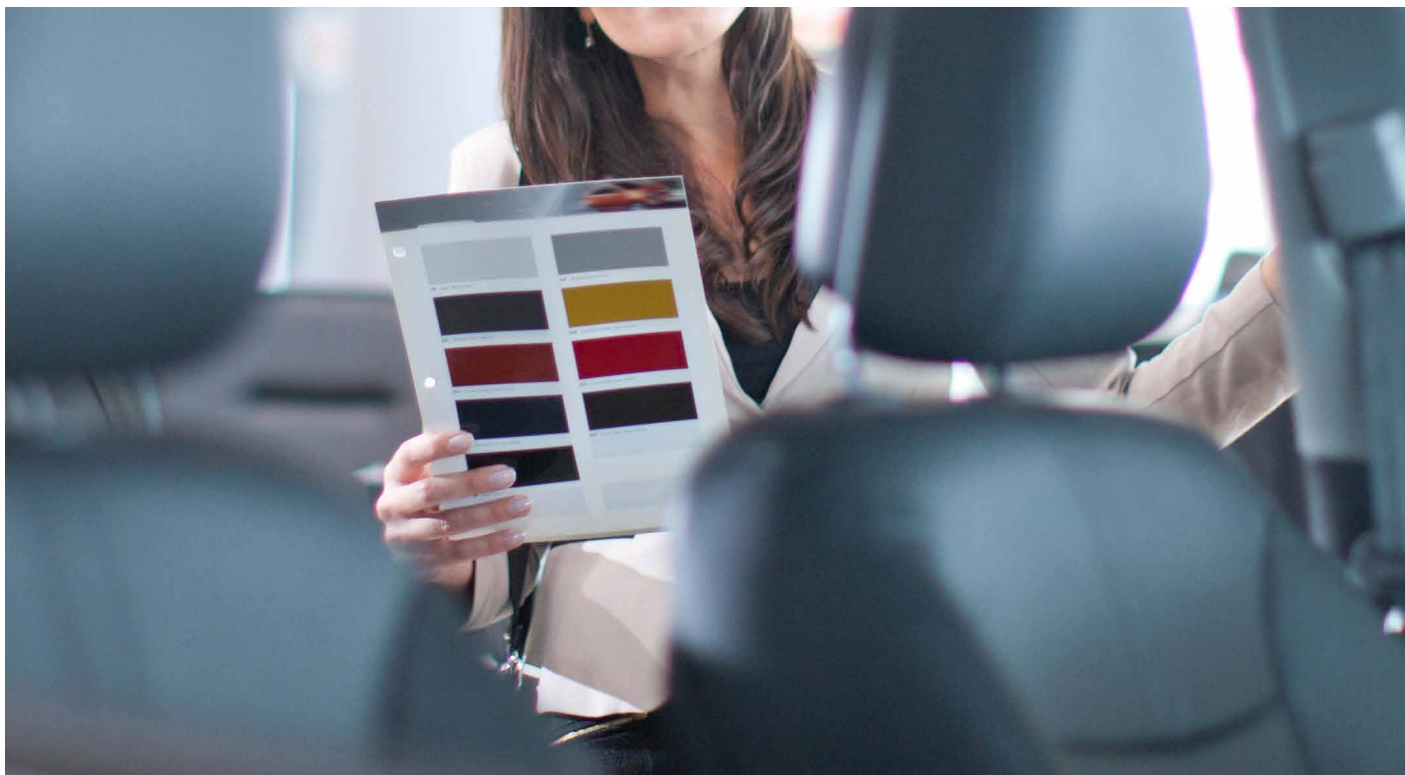
- A. High degree of product standardization with relatively small number of optional SKUs and easily identifiable of models and parameters;
- B. All belong to highly frequent maintenance service of rigid demand;
- C. Compared with the high value of single replacement, the absolute price advantage brought by e-commerce is obvious;
- D. After the market promotion of brand owners in recent years, the products are highly recognized by consumers;
- E. The problem of fake goods occurs frequently in offline retail, and consumers have low trust in offline retail.

With the further cultivation of e-commerce in the maintenance market, the online penetration rate of quick-wear parts with rigid demand are expected to be further improved. Tire as the front-runner has taken the lead in the industry to finish a more complete integration of supply chain and smart retail model. OBT is expected to achieve the target of online penetration rate of more than 20% in the next 5 years, and core categories of other quick-wear parts (air filters, brake pads, spark plugs, etc.) are also expected to challenge the goal of 10% in the next five years.

2.4 Industrial transformation under the trend of consumption: as competition intensifies, buyers begin to take the initiative, forcing the industry to complete industrial upgrading centring on consumer demand

Based on in-depth study of Chinese consumers thereon, we can see that there is a big difference between Chinese consumers' demand and that of developed markets. Chinese consumers tend to hope for reassuring and worry-free maintenance services. In particular, consumer groups of young millennials, who are very different from the previous generation and have individual + internet-based demands brought by consumption upgrade, and the big culture difference in the vast territory of China jointly reflect that there's a differentiated and huge development space for maintenance demand. Compared with other markets in the world, domestic consumers' preference for mobile consumption is leading the world, which also requires the industry to transition to digital transformation and meet the new preference of consumers.

With the vigorous development of mobile Internet technology, a growing number of new models emerge to better satisfy consumers' core demands, especially the involvement of large number of companies with Internet genes. They have vigorously promoted the development of customer-oriented post-service business model. Instantly, consumers have numerous new choices and marketization of the industry is accelerated. A large number of consumer groups begin to turn to online e-commerce platforms for better experience in auto parts service consumption. While the pain points of traditional mode are becoming more and more prominent, forcing the entire industry into an accelerated reform period. So how will the market pattern evolve? Which models will stand out? Who can break through in this reform? We will elaborate on these questions in Chapter Three.



Chapter III

Taking the advantage of digitization, the new model of value chain integration will lead to a new pattern of the industry



3.1 Status quo of China's auto maintenance market: Defending stubbornly the position under traditional model cannot satisfy the demand trend anymore, and opportunity offered by new mode is fully opening up

First of all, from the perspective of overall market value chain, the domestic auto maintenance market can be divided into three types of demands based on terminal demand, which are respectively the original factory maintenance DIFM demand, non-original factory maintenance DIFM demand and non-original factory maintenance DIY demand.

China's maintenance market is dominated by DIFM model which will remain for a long- time. At present, the terminal consumption output value of DIFM model accounts for more than 95% of domestic market share and, as Chinese consumers are incapable of replacing parts by themselves and labour dividend remains, the market will therefore continue to be dominated by DIFM model in the long run.

Under DIFM model, the original factory maintenance demand is still the largest market demand from the aspect of share of terminal consumption output value, but in the medium and long run, it is highly probable that the share will be continuously converted by non-original factory maintenance demand, which are primarily caused by:

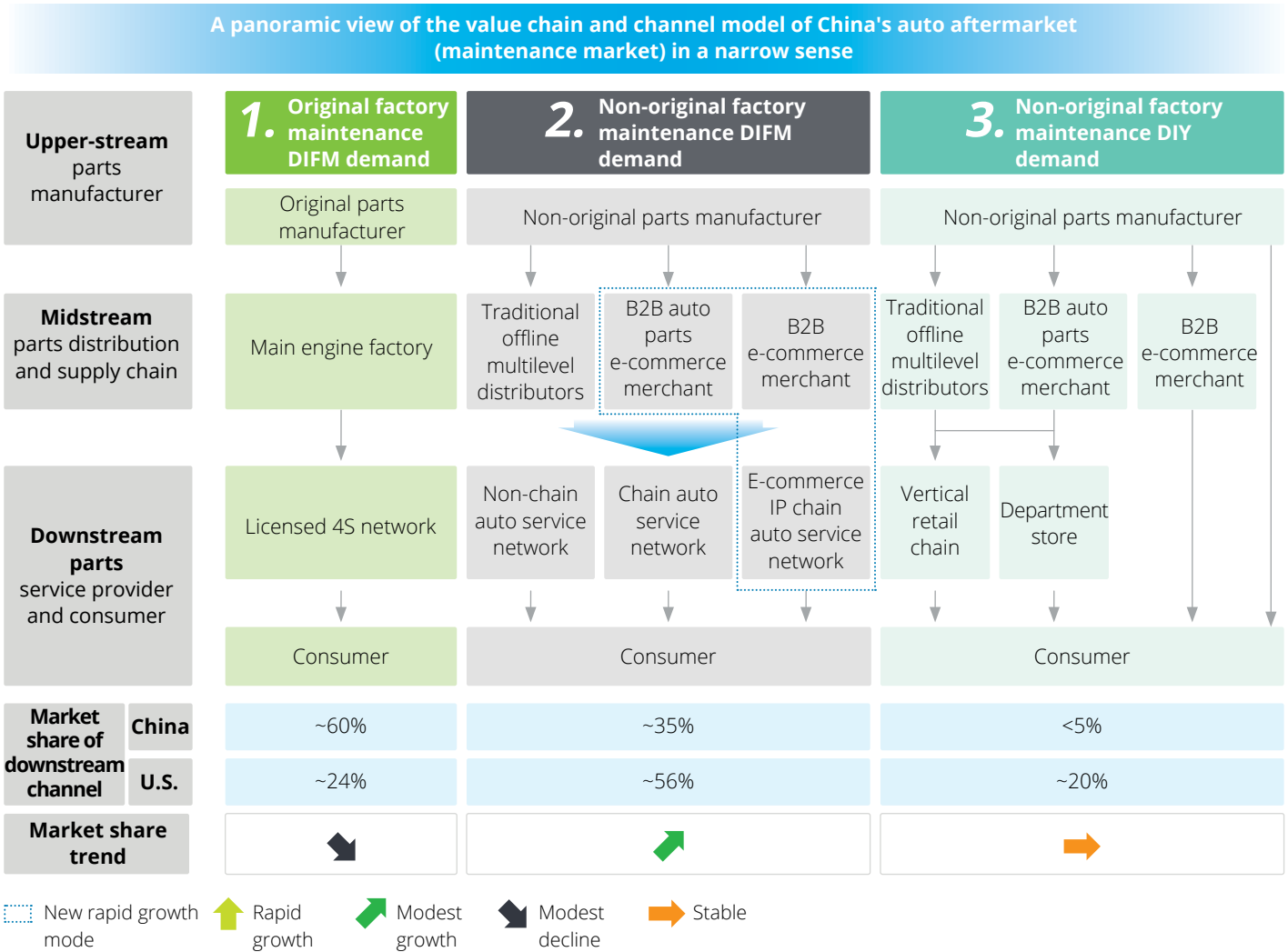
- **Decline in number of networks:** As the traditional 4S stores overdeveloped during the past 20 years, the number of networks will continue to shrink in the long run
- **Higher service price:** The decline in new car sales volume results in long-term losses of new car business of 4S network, and after-sales service becomes the main source of profits. Besides, the high purchase cost of original factory parts leads to the lack of competitiveness in service pricing for a long time
- **Inconvenient location:** Traditional 4S stores are large in scale with higher environmental protection requirements, the locations of which are generally far away from the main urban area, and therefore it is not convenient compared with third-party repair stores

Data of H1 2020 released by China Automobile Dealers Association shows that¹¹:

- 1019 4S stores withdrawn from the network in the first half of 2020, and the increase in the number of dealer network ceased;
- The new car sales volume of nearly 80% 4S stores was in a downward trend, and the overall gross profit margin of new cars was decreased to -3.5%. The situation of "the more you buy, the more you lose" is further aggravated;
- Among nearly 30,000 dealers, 38.3% reported a loss, 32.9% made no profit or suffered no losses, and only 28.8% reported a profit.

11. Source: Report on the Survival of National Auto Distributors in the First Half of 2020, http://www.cada.cn/Trends/Info_92_7644.html

Figure 3.1-1: Status quo of the pattern of China's auto maintenance market



Note: DIFM=Do It For Me, i.e., end point of auto parts consumption is at the time when service provider completes its services
 DIY=Do It Yourself, i.e., end point of auto parts consumption is at the time when parts are installed by customers themselves

Focusing on non-original factory DIFM market demand, value chain division was quite clear in the past, and the upstream, midstream and downstream business had clear business boundaries, with almost no systemic interaction. However, the division model of relatively traditional value chain has experienced great changes in recent years, which was mainly due to the development of technology which provided the possibility for vertical integration of the value chain. To be specific, the industry of conventional consumer goods (including maintenance products and services), relying on digital technology, is generally experiencing the following trend of value chain integration:

M2B2b2c Vertical integration trend:



Under traditional value chain model, multi-level distributors are involved in the circulation of spare parts, which has been changed by M2B2b2c model. Auto parts chain (midstream) is operated by a platform-based supply chain, connecting both upstream manufacturers in some categories and terminal service networks, realizing the flat parts circulation and reducing the intermediate circulation costs. However, at the upstream and downstream data interaction level, enterprises on midstream supply chain will not enable real-time data interaction in a systematic and standardized way, and flattening integration is essentially completed at the midstream level, making upstream parts enterprises save their costs, downstream service networks reduce parts purchasing cost, and midstream supply chains obtain objective supply chain profit. In addition, traditional M2B (parts manufacturers to supply chain platforms), B2b (supply chain platforms to terminal auto service stores) and b2c (terminal auto service stores to consumers) are completely independent from each other and, essentially, M2B2b2c is a kind of model where no intermediate agency exists.

S2c Vertical integration trend:



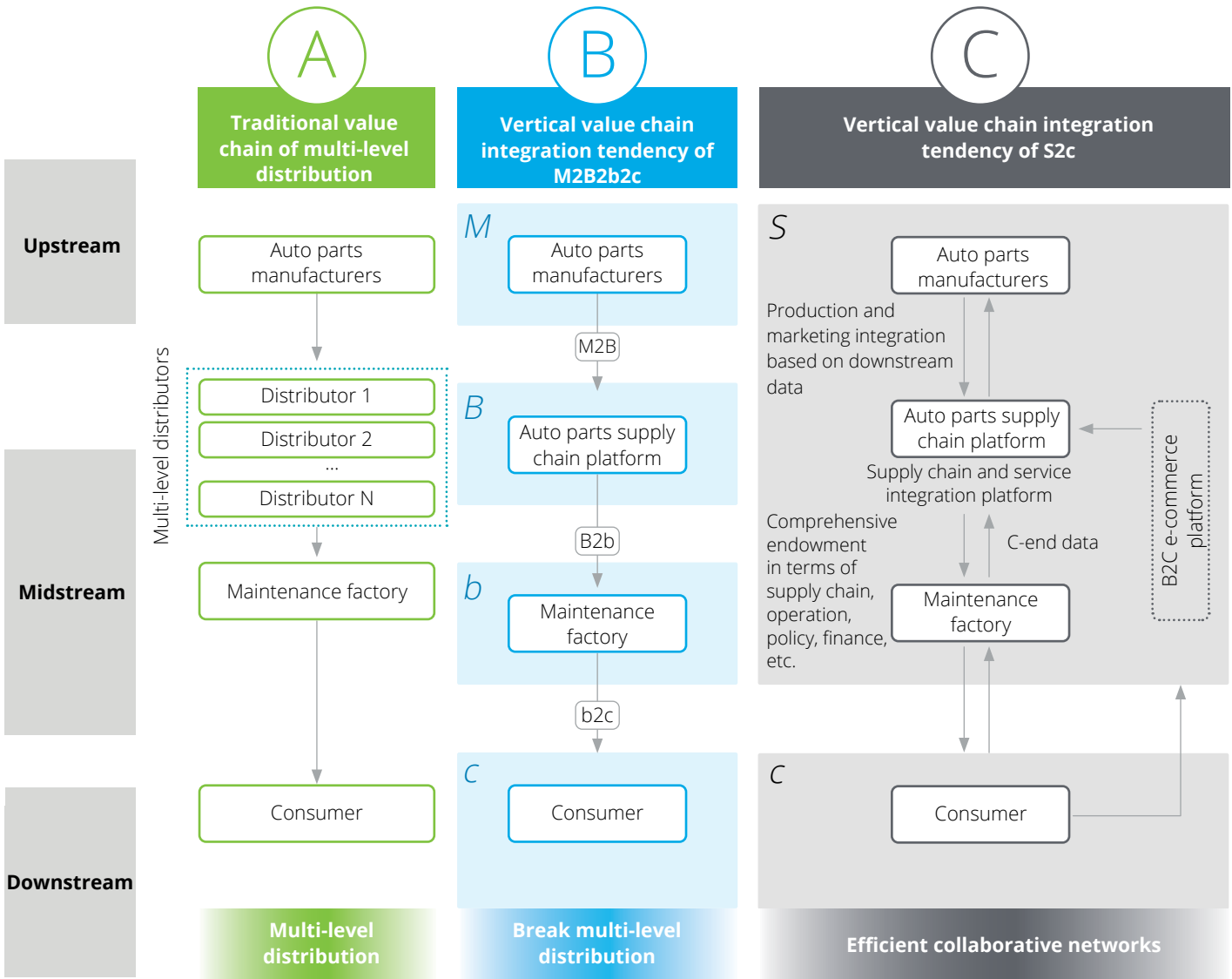
The joint name after data integration of parts manufacturers (upstream), supply chain & e-commerce platforms (midstream) and auto service networks (downstream)



End customers

In auto maintenance industry, S2c is an advanced form of M2B2b2c model. Under S2c model, M2B, B2b and b2c were originally three independent business flows which are integrated by intermediate supply chain platforms. Supply chain platforms form a strong cooperative relationship with upstream suppliers, enabling the demand data for upstream production capacity and production plan, and even establishing OEM relationship. In the meantime, it enables the supply chain for downstream auto service stores, completing the integrated enablement in the fields of brand, network and service standard, digital operation, 2c e-commerce and customer operation, etc. Breakthrough of integration enablement can be achieved by means of franchise, equity participation or direct sales, etc., so as to realize the integrated value chain integration of S2c. And the most important thing is to realize the exchange and integration of upstream and downstream data, achieve the production and sale synergy between upstream and downstream enterprises based on such data, and realize the optimal asset efficiency.

Figure 3.1-2: Comparison of traditional model, M2B2b2c and S2c



Source: Deloitte Research

The value chain integration is accelerated, promoting the improvement of industry concentration. At present, the S2c model has begun to take shape, and compared with the traditional model and M2B2b2c model, it will have the optimal supply chain efficiency and production and sales synergic relationship, achieving deep optimization of stocks from all links in the supply chain and the most

advantageous spare parts cost. Furthermore, the extreme enablement will also make the downstream networks more competitive. Therefore, Deloitte believes that the S2c model will facilitate the improvement of concentration of the entire maintenance industry as it becomes more and more optimized and matured.

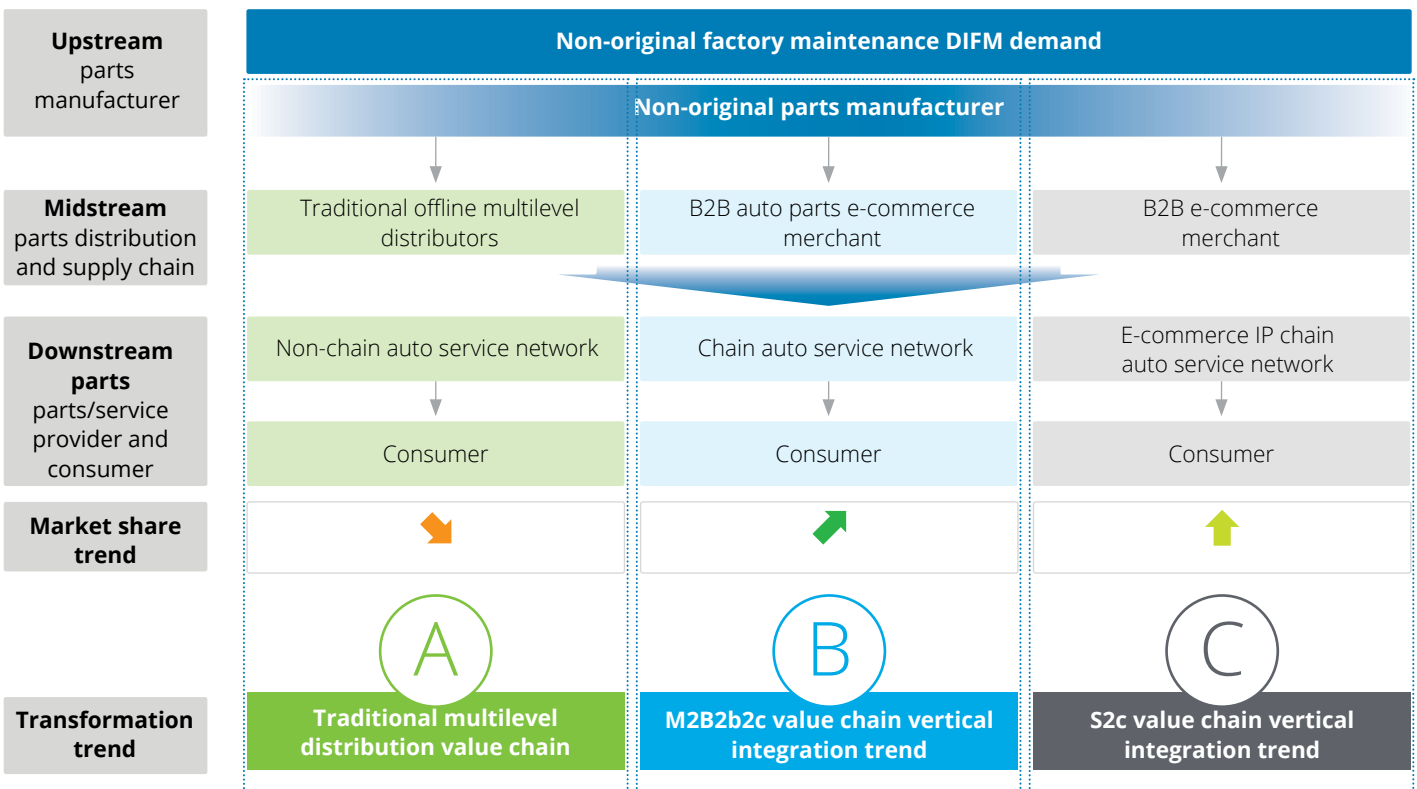
Among non-original factory auto service DIFM demands, the downstream of traditional multilevel distribution value chain are mostly some small and medium-sized auto service stores, which are the most unstable participants in the market that lack competitiveness due to the generally small size of individual stores, the lack of supply chain capacity, service standardization ability and brand endorsement, the weak technology and insufficient talent reserves.

In addition, among non-original factory auto service DIFM demands, the downstream of M2B2b2c model is dominated by some large and medium-sized chain service networks, which will show a moderate growth trend in the medium and long term. Although the traditional auto service chain is congenitally deficient in digital capability, compared with a large number of small and medium-sized individual stores, it has obvious cost advantage and resource advantage in terms of spare parts procurement scale, store operation and

technician resources, and with the strong demand of the market on standardization, the brand chain will become a development trend.

Furthermore, S2c is the most explosive model in non-original factory auto service DIFM demands, the terminal networks of which are mostly the service networks under the IP of the integrated supply chain platform. Such model has developed rapidly in recent years with significant scale effect and strong reproducibility, and the leading brands are bound to emerge.

Figure 3.1-3: Market share development trend of traditional model, M2B2b2c and S2c



↑ Higher improvement potential
 ↗ Modest improvement potential
 ↘ Modest decline trend

Source: Expert interview, Deloitte Analysis

3.2 Business model and direction of transformation: The enterprises are seeking for a change, and the rapid development of technology may make the value chain integration model "Rome" of the industry

We've concluded two categories of vertical integration trends on the perspective of value chain in the above paragraphs, such new trends have been gradually leading by industrial representative enterprises, which either participates in the trend with partial coverage of value chain or in hope of participation in the trend in the form of comprehensive integration of value chain. Moreover, with the rapid development of mobile Internet technology in recent years, enterprises from Internet industry have begun to participate in the market quickly, and the well-known enterprises on the original value chain are seeking for a new model. After years of development, the business model becomes increasingly clear and at present, the trend of industrial integration is abundantly clear, and there are four mainstream models as showed in the figure above. Among these models, what advantages do enterprises from different backgrounds have and who will grow and develop rapidly in the future? Deloitte's judgments are as follows:

Mode 1 M2B2b2c Value chain model

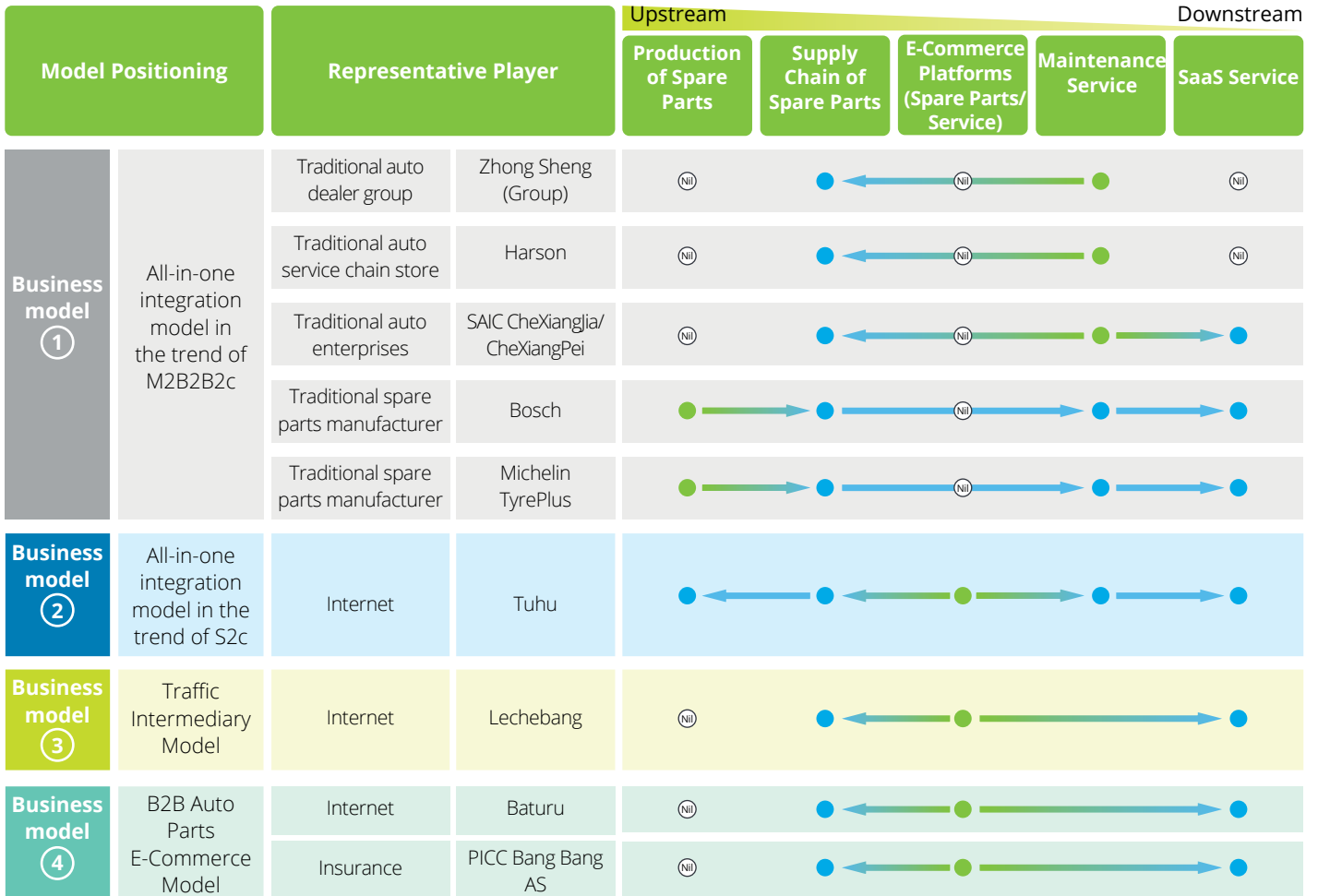
Under the traditional multilevel distribution model, major enterprises are original factory after-service chains (i.e., the original factory 4S network system) represented by traditional dealer group, as well as the maintenance chain brands represented by traditional third-party auto service chains, traditional OEMs and traditional parts manufacturers, and their development potentials are as follows:

Traditional auto service chains: At present, there are few traditional auto service chains with volume advantage, so it is difficult to complete M2B2b2c integration by relying on their own development. And, apart from vertical integration, the reason why there are few well-known brands of traditional chain in China is due to their lack of digital capability that leads to the restrictions for making a scale expansion. Therefore, such enterprises may need to cooperate closely with enterprises in the value chain to complete the integration of M2B2b2c.

Traditional OEMs: At present, some traditional OEMs (such as SAIC Chexiangjia and BAIC Autoyong) have begun to try the M2B2b2c value chain model. Although their performances and results may fail to reach the expectations of main engine factories, OEMs still have obvious advantages in the maintenance market, which is mainly attributed to their rich accumulation in maintenance technology and standards, parts supply chain systems, standard service processes, existing customer data precipitation and other aspects, and shortages of some new market participants have already been overcome by OEMs. Deloitte believes that for traditional OEMs, the best model in the future should be the S2c model, and the building of stronger digital capability and the ability to face customers directly, especially the ability to build e-commerce based on the capability of the existing M2B2b2c model will finally realize the transformation to S2c model. Deloitte believes that OEMs have inherent advantages in resources and capabilities, and enterprises with OEM background are expected to participate in the S2c model in the future.

Traditional parts manufactures: Similar to traditional OEMs, some traditional parts manufacturers are equipped with terminal maintenance chain network for a long time, and they have been building M2B2b2c value chain integration advantages in recent years. Compared with OEMs, in addition to having all of the advantages of OEMs, traditional parts manufactures have a better directing force and cost advantage than OEMs. However, such enterprises are also facing a similar situation as OEMs. The staged integration of M2B2b2c is still unable to achieve the ultimate supply chain efficiency and asset efficiency, and future commercial success will require a further shift to S2c model. Deloitte believes that the parts manufacturers, especially comprehensive parts manufacturers, are similar to traditional OEMs under the S2c model and have many inherent advantages, and therefore they are likely to participate in the S2c model in the future.

Figure 3.2-1: Orientation of business model and situation of enterprises in auto maintenance market



● Initial Business Layout in the After-market It refers to the business of an enterprise engaging in the initial layout in the auto after-market
 ● Post-Extension Business Layout It refers to the value chain business that an enterprise subsequently engages in based on the initial business for further completion of value chain integration
 Ⓜ Temporarily lack of layout It refers the value chain field that an enterprise has not been engaged in or engaged in with quality

Remarks: Information in above figure is as of October 2020, which was sorted by Deloitte based on open market information

"Although S2c model seems to be an objective trend in the long run, it should also be noted that the service types in the auto maintenance industry are quite diversified with a large number of SKUs of parts, and in the short and medium term, S2c model will still focus on maintenance services. At present, S2c model has no material impact on non-standard maintenance services, and M2B2b2c model is still a staged development choice in the short and medium term for large and medium-sized comprehensive maintenance enterprises with local resource advantages and technology accumulation. However, I believe that in the future, S2c model may also be adopted for non-standard businesses, which may gradually begin in the form of pilots on partial businesses, such as stamping injection business and businesses with relatively more standardized attributes."

General Manager of ASWORLD, the vertical media of auto maintenance industry
Hu Junbo

Model 2 S2c Value Chain Model

The S2c value chain model is currently dominated by enterprises with internet background, and the general development path is to start from the e-commerce platform in the value chain, to complete the integration of the value chain upstream and downstream at the same time. In terms of integration of upstream value chain, the scale advantage of e-commerce channels is utilized in combination with a small number of core purchasing goods to quickly achieve scale effects, and surpass the traditional offline channels to become a leading channel. In addition, with the deepening of scale effect, the own brands are used to build OEM product lines to further reduce the cost of spare parts and become the enterprises with the most competitive prices in the market.

In terms of integration of downstream value chain, internet enterprises have stronger digital and online customer acquisition capability, and generally have the following core distinctive capabilities compared to the enterprises with traditional industry background:

- **Digital customer operation capability:** realization of digital customer operation and marketing and accurate marketing with e-commerce and mobile platforms
- **Service standardization capability:** transformation of traditional auto service process and experience with digitalization to achieve higher-quality standardization
- **Digital operation capability of auto service network:** use of digital technology can help downstream auto service network to achieve higher-quality quantitative operation and management capability to realize higher management scale effect
- **Consumer insight capability:** use of e-commerce and mobile platforms could achieve more comprehensive, quantitative and direct customer insights, and help brands to more accurately identify high-demand areas and complete higher-quality network site selection

Therefore, Deloitte believes that the S2c value chain integration model has many competitive advantages compared to the traditional vertical integration model, and provides a guarantee with more differentiated value in terms of customer operation, cost of spare parts and operation quality of auto service network compared to the traditional model and the M2B2b2c model. This model has great development potential, and the enterprises dominating the non-original auto service DIFM demand market with S2c model are expected to become bigger and stronger. Besides, it has better scale effects and reproducibility compared to other models, and occupies a high market share, which promotes the rapid improvement of industry concentration.

Looking from the current market structure, S2c model has roughly formed a scale after the rapid development in recent years, and absolute head enterprises have come into being, with Tuhu as a representative leading enterprise.

Tuhu platform has been established for almost ten years since its e-commerce was available in 2011. In 2016, it began to build offline chain close-loop network under S2c model. After almost five years' offline network development, it has completed more than 2,000 workshop stores (i.e. chain stores with IP image of Tuhu) + 13,000 partner stores¹² (the original network storefront signboard and name are unchanged, and Tuhu provides supply chain services for spare parts). Its online and offline integration capabilities relying on the "two keys" of digitalization and standardization have been verified and recognized by the market, and its practice accumulation in the field of auto service is faster than the average level of the whole industry.

In the past two years, Tmall and JD, as the two comprehensive e-commerce giants, started the value chain integration model of S2c. The current model of Tmall is similar to Tuhu, but it started later. JD Jingche Club adopts the model of "Less Strict Management and Control" for the offline stores. Currently, Tuhu takes a leading position in store network layout and pure S2c market share, which mainly lies in the following core competitiveness:

Downstream stores:

- **Standardization capability:** Tuhu adopts the traditional process, digital operation tools and digital online talent training system to build a high level of standardized service experience, which helps to quickly build trust with consumers
- **Digital store operation capability:** High-quality digital touch points are established for e-commerce and customer operation, and a complete digital close-loop is formed, which provides the most important data assets for S2c model and helps stores complete digital management empowerment to achieve digital lean management
- **Site selection capability of big data:** With the increase in the number of users of Tuhu, the value brought by the accumulation of data is vividly reflected in the process of site selection. At present, Tuhu could form an important reference for network layout based on the actual orders in the uncovered areas and the utilization rate of the surrounding stores to complete the precise network layout, making the recovery period of the new stores shorter than those of the similar competitors or the traditional network layout

Midstream supply chain:

- **More professional warehousing capability for spare parts:** Tuhu's warehousing capability is focused on auto spare parts. It has stronger professional warehousing capability compared to the traditional comprehensive e-commerce, and most of the stores can achieve the frequency of two distributions a day
- **Scale cost effect:** At present, Tuhu already has very strong channel scale effect in many categories of spare parts, and has strong upstream premium ability and cost advantage
- **C2M capability:** The consumption data accumulated by Tuhu has been able to help the consumers form reverse upstream customization. Tuhu will optimize upstream products based on the feedback of consumers to make the product experience better and more viscous

12. Source of Data: Sorted from open official website of Tuhu, <http://www.tuhu.cn/>

- **Inventory management capability based on demand forecasting:** Tuhu has obtained the direct terminal data in demands while empowering the downstream retail with SaaS, and completed coordination of production and marketing based on the demands, and even actively distributed goods based on the demand forecasting, keeping the overall inventory of the supply chain at a low level while the stores replenish the inventories with no prepayments, and making the management of the inventories of downstream stores become very simple, which takes up little management resources

Upstream parts production:

- **Capability of own product lines:** With the own advantage in scale, Tuhu has completed the OEM of some of its product lines, and can get more profits from midstream and downstream

In terms of the current competition structure of S2c model, the overall value chain integration of Tuhu is relatively balanced and at a leading level, however, the huge market is still waiting to be developed, and the existing store network cannot meet the demands of all consumers, thus there is broad space for future development. From the perspective of the growth rate of network layout of enterprises in S2c model, it is faster than the M2B2b2c model. In the long run, S2c model has better reproducibility, and the leading enterprises in this model are expected to lead the whole auto maintenance market.

Model 3 Vertical Integration Model of Flow Intermediary

Simple flow intermediary is unable to achieve a triple-win of consumers, platform and maintenance service network, and the business logic cannot support its sustainable development. At present, most of the flow intermediaries of the industry are 4S stores with insufficient utilization of upstream production capacity, which offer discounts as a selling point to attract consumers, collect the demands of the consumers who are sensitive to prices, and distribute these demands to 4S store service network, all of which intensify the price competition among the 4S store system. From the current trend of internet development, the survival space of simple flow intermediary has become smaller and smaller, and the sustainable high-quality development needs to find new value creation points other than flow intermediary. The existing enterprises of the industry that are positioned to this model, such as Lechebang, have initiated the transformation, and gradually integrated the supply chain upstream, and developed SaaS and service network management empowering services etc. downstream, all of which are seeking true value creation to achieve multi-party win-win balance point. Therefore, enterprises that use flow intermediary as the starting point to achieve a gorgeous turnaround need to build more upstream and downstream capabilities. They no longer have core screens advantages and are faced with greater transformation challenges compared to the enterprises that enter the market with vertical integration model of intelligent maintenance chains.

Model 4 B2B Auto Parts E-commerce Model
Vertical integration of B2B auto parts is an integration model with very clear business logic. From the perspective of supply chain integration, almost all consumer goods industries will complete the flat vertical integration of the supply chain in the digital age, gradually replacing part of the markets under the original multi-level distribution model, and B2B large-scale e-commerce engaged in auto parts will inevitably arise.

In the B2B vertical integration model of auto parts, enterprises are divided into two types, one is B2B auto parts e-commerce focusing on vehicles parts, and the other is B2B auto parts e-commerce focusing on quick-wear parts. Vehicle parts have always been subject to the trouble of excessive SKU of vehicle parts in the overall market due to the fact that the domestic models are far more than the mature markets. Before the popularization of digital technology, it has always been in a fragmented traditional auto parts model, with multiple distribution levels and inefficient supply chains, lack of digital technical support for supply and demand matching, so that the small auto parts suppliers, like many small and medium-sized capillaries are relied on to satisfy the demands of many social repair plants for auto parts. From the perspective of the general trend of supply chain efficiency improvement and the value of solving industry pain points, the B2B e-commerce track of vehicle parts relying on digital technology has great development potential, and the business model can achieve a win-win situation for multiple parties, which is a relatively definite opportunity. At present, the leading enterprises have gradually integrated the supply chain from the auto parts e-commerce platform to the upstream, which further broke the inefficient supply chain system of multi-level distribution. On the other hand, they have integrated the management digital business of the terminal social repair plants downstream to provide supply chain SaaS and the empowering tool such as the integrated technical support SaaS for vehicle diagnosis and ordering to build downstream empowering capabilities and establish a more valuable vertical integration model. Deloitte believes that this model has relatively clear integration ideas and has the essence of creating business values for multiple parties, thus it is a very promising new model in the future.

Focusing on the racing track of vehicle parts e-commerce, the newly-rising enterprises Baturu and Cass have attracted a lot of attention of capital and industry. The models of the two enterprises have their own focus. Baturu focuses to a warehouse model, relying on its self-built warehouse system, the warehousing effect of completing all kinds of vehicle parts with agents, providing agents with warehousing services and downstream demand docking, as well as supply chain financial services, so as to build a vertical supply chain integration ecology of vehicle parts. While Cass enters the field of B2B e-commerce in a relatively lighter model. It focuses on transaction facilitation by docking auto parts dealers in the upstream and third-party maintenance service network in the downstream. It uses digital technology to form auto parts SaaS support platform to complete end empowerment, and form high user royalty. The two models are the current heavy assets warehousing platform model of vehicle parts B2B e-commerce and light assets transaction facilitation platform model. The service capabilities of the two models have their own focuses. Since the two models have just started, it is difficult to tell which model will dominate the market in the future. However, vehicle parts B2B e-commerce is certain to have a promising future. I believe enterprises with significant market influence will emerge in the future.

Another vertical integration model of B2B auto parts is the B2B auto parts e-commerce focusing on quick-wear parts, which is generally a key business puzzle under the aforementioned vertical integration model of intelligent maintenance chain. Consumers have a stronger brand awareness and direct decision-making power for quick-wear parts, and with relatively few SKUs, it is easier to build a supply chain compared with vehicle parts, but supply chain markup rate for categories with a strong consumer brand awareness are relatively lower. Therefore, we believe that in the medium and long term, as an important business puzzle in the vertical integration model of the intelligent maintenance chain, its strategic value can give a better play through collaborative development.



Case review of the development of American auto maintenance market

The American and Chinese markets have always been studied and benchmarked as the future scenario of the Chinese market in various industry studies, but from the perspective of auto aftermarket, there are still obvious differences between the two in many aspects, and China's auto aftermarket is destined to become a market with Chinese characteristics in the future. Although the U.S. market may not represent the long-term situation of China's auto aftermarket, the business development logic behind is still worthy of reference for the Chinese market. In this article, the key points that the Chinese market can learn from U.S. market will be presented to the reader in an efficient manner.

Market demand pattern

The American and Chinese markets have always been studied and benchmarked as the future scenario of the Chinese market in various industry studies, but from the perspective of auto aftermarket, there are still obvious differences between the two in many aspects, and China's auto aftermarket is destined to become a market with Chinese characteristics in the future. Although the U.S. market may not represent the long-term situation of China's auto aftermarket, the business development logic behind is still worthy of reference for the Chinese market. In this article, the key points that the Chinese market can learn from U.S. market will be presented to the reader in an efficient manner.¹³

Value chain model

The U.S. auto maintenance market is a typical M2B2b2c market. At present, there are four leading auto parts chain enterprises (AutoZone, Advance Auto Parts, O'Reilly and GPC), which account for more than 30% of the market share.¹³ As there are a large number of DIY markets in the U.S., the four large chain enterprises were almost all principally engaged in auto parts at the beginning. Their businesses initially included B2B and B2C (DIY) auto parts, utilizing a variety of networks to cover the entire U.S. market. After growing much bigger, some brand chains gradually started to cover after-sales service. However, overall, the revenue from B2C maintenance services of the four companies does not account for a high percentage, which is quite different from the Chinese market. The difference is mainly due to the following two reasons:

1 Production capacity of U.S. auto parts companies is generally located overseas.

S&OP is limited by geographical distance, resulting in relatively low flexibility. The low flexibility of upstream requires the supply chain to have a deeper inventory as a buffer to mitigate the fluctuation of supply and demand, so it is difficult to achieve efficient S&OP like the extremely high efficiency in China's local S2C model even with the realization of data base in S2C model.

13. Source of Data: Interviews with industrial experts, sorted by Deloitte.

2 High logistics cost. The overall logistics cost in the U.S. is lower than China, as reflected in the percentage of logistics in GDP, which is also lower than China. It is enough to demonstrate that the overall logistics cost in the U.S. accounts for a lower percentage in GDP, mainly due to lower costs in the U.S. long-distance transportation industry. However, the cost of urban delivery logistics in the U.S. is much higher than that in China, mainly because labor costs of urban delivery in the U.S. are high, while labor costs in China are much lower than that in the U.S. Therefore, the cost of B2B urban delivery and B2C urban delivery in the domestic cities is significantly lower than that in the U.S., which also leads to a low rate of online auto parts retail.

Therefore, due to the above reasons, the four enterprises in the U.S. market are actually under a business model based on offline auto parts networks. The after-sales service in the networks only accounts for a small proportion of their business, and only part of the networks are capable of providing direct after-sales service.

Take AutoZone for example, different from the "central warehouse-provincial warehouse-preposition warehouse" mode of the mainstream auto parts warehousing logistics system in China, the four U.S. enterprises have established 4-level network system. The 4-level offline network system is composed of central warehouse, Mega hub, Hub and satellite store. In AutoZone's over 200,000 SKUs, the goods preparation rate of central warehouse reaches 98%, satellite store 60%-70%.¹³ Both Mega hub and hub adopt the model of store + warehouse, enabling retail and goods transfer among stores. The whole system becomes more flexible. Its initial business logic and entry point lie in the auto parts supply chain. The 4-level supply chain not only satisfies B2B auto parts demands, but also enables sub-level network to cover B2C demands. With the development of business, the four enterprises begin to extend their business to the downstream, and begin to cover after-sale services through M&A and the original network.

Highlights of value chain integration

Upstream and midstream auto parts supply chain:

Manage auto parts purchase cost by utilizing the advantage of channel centralization. O'Reilly attaches great importance to the control of the purchase size of single supplier so as to limit their say and ensure enterprise size advantage. Take O'Reilly for example, it had 735 suppliers in 2019, of which the largest one accounted for about 7%, and the second to the fourth largest suppliers accounted for around 3-6% respectively. ¹⁴On the one hand, it can not only increase the channels of auto parts supply, etc., free from the constraint of a single supplier, on the other hand, more and more manufactures are willing to provide longer credit period of payables with the improvement in channel say. It also brings more possibilities to the control of financial cost and improvement of operational complexity.

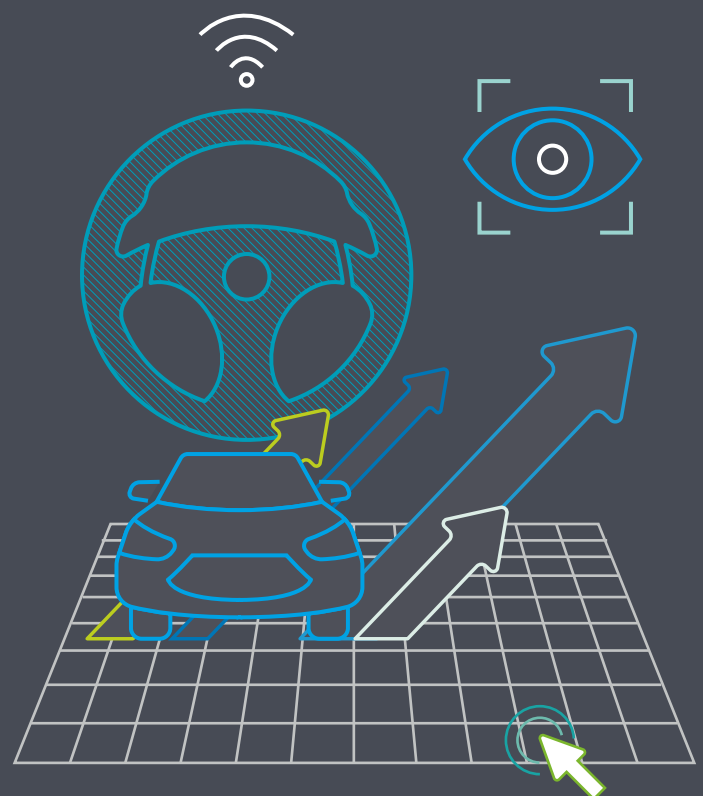
Utilize supply chain IP to build OEM products and enhance the advantage of supply chain cost. On the basis of covering mainstream international auto parts brands, the big four U.S. auto parts companies have all built a series of their own brands, using their own supply chain brand IP OEM products to increase supply chain profits, such as AutoZone's AFO (filters), Autokraft (maintenance tools), Femo (oil pumps), etc., and O'Reilly's BestTest, BrakeBest, MasterPro, Murray, Precision and other brands.

Downstream auto parts retail and service network:

Highly standardized store operation ensures stable store revenue and rapid establishment of chain brand power. To ensure the high quality expansion of stores, the big four U.S. auto parts companies

have established complete standardized system centering on all aspects of store operation, including decoration, goods display, backstage management system and employee training, etc.

Based on the control and analysis of terminal network and consumer data, it can more accurately identify needs and cast net in potential area, improve site selection accuracy and realize high quality expansion. For example, centering on local user portrait, vehicle type maps, customer consumption trend, number and size of competitive stores, as well as rent, AutoZone has established standardized site selection system for new stores in the American market, ensuring that the new stores have competitive revenue (e.g. the size and characteristics of local customers) and cost (e.g. rent) through in-depth research and strict calculation. Based on that, the new stores copy its complete operational model and system right after the business is started, and have effective control over efficiency and cost.



14. Source of Data: Information that is openly disclosed in the financial statements for 2019 of O'Reilly.

3.3 Behind the business model transformation: Phenomenal reconstruction of "Man, Goods, Payment, Customer and Store "promoted by the tide of digitalization

Whenever we talk about the transformation of auto maintenance market of China, more attention is focused on model innovation, while industry capital and industry participants have also started to practice "modelism", hoping to achieve a more accurate layout and development through in-depth discussion and selection of models. However, the reality is often not as simple as it seems. The racing track that seems correct is full of competition, and the number of leading enterprises that really stand out is quite limited. Deloitte believes that model is only the external form of resource integration. In the auto maintenance market, the fundamental business logic

and essence lie in how to effectively improve the quality of the five elements of "man, goods, payment, customer and store". Any model that truly achieves a fundamental improvement of the five elements has a chance to secure a place in the market, while there are opportunities for rapid transformation in the Chinese maintenance market driven by the digital wave. The following is an in-depth analysis of how the future market will utilize digital technology to reconstruct the five elements of "man, goods, payment, customer and store" from a digital perspective. (Man: technician and store manager; customer: consumers.)

"I think the auto maintenance industry should not place too much emphasis on model. For example, Tuhu has also undergone some changes in the so-called model along the way. Essentially, our goal is to serve consumers, and what consumers need is what we are going to do. The ultimate state is to enable upstream, midstream and downstream and consumers receive better services. Therefore, I hope that both the industry and those who have been following the industry can pay more attention to the essence of business. We have always been concerned about optimizing and reshaping the five elements of "man, goods, payment, customer and store" for the industry. Any so-called model needs to essentially improve these five elements and ultimately realize value enhancement to consumers through these elements. The reason why they can be restructured is due to the development of digital technology. Therefore we have been attaching great importance to the investment in digitalization. We hope to work with the ecological participants in the industry to make the auto aftermarket better and more mature in the future."

founder and CEO of Tuhu
Chen Min

Digitalization reshapes "Man" - Releasing training efficiency for mechanics and improving value of mechanics driven by digitalization

Industrious mechanics and administrators in the auto maintenance industry is the mainstay of the industry. However, before the advent of digitalization era, low training efficiency for mechanics' maintenance technology and ability is the major pain point of the element "Man" amongst the five major elements. However, with development of digital technology, this pain point has been gradually settled by certain digital solutions, furthermore, it is hopeful that the quality of the element "Man" in the industry may be fundamentally improved in the future. The pioneering digital solutions are improving efficiency of talent fostering, these aspects of practice mainly include:

- **Digital training:** Improving efficiency of talent fostering by making use of digital online platform and digital training system; in addition, establishing online system of personnel competence certification, building a clear "knowledge tree" of personnel competence development, and forming a visualized roadmap of personnel competence development to endow personnel development.
- **Standardization of personnel execution:** in the business process of mechanics, introducing digital tools and equipment (such as diagnosis tools, handheld process guidance tool, and etc.), forming execution tracks for key operating nodes, driving highly-efficient execution of important processes by digitalization, and quickly completing construction of personnel standardization competence by highly-efficient execution.
- **Digital technical support:** digitalization of maintenance technology and technical contents and endowment to mechanics relying on knowledge management platform have been a definite industry development trend. In addition, the digital diagnosis tool is also a hot spot trend at present. The diagnosis tool, together with emerging technologies such as big data and internet of things, can provide professional and intelligent auto diagnosis and technical support service for mechanics so as to bring down the permission threshold for mechanics and rapidly improve personnel competence.



Digital diagnosis boost lowering the technical threshold of non-standard repair business

In August 2019, the president of Greater China of the global first large-sized vendor of auto technologies and auto aftersales market, indicates that "accessories + diagnosis + maintenance station service" is a strategy of its After-sales Global, of which the digital diagnosis service and professional endowment service of maintenance station are the most competitive advantages. At present, the enterprise mentioned above has a cutting-edge market standing in the sector of digital tools of vehicle diagnosis. Its all-series checkout equipment include engine analyser, intelligent diagnostic apparatus, auto speciality

oscilloscope, test equipment for exhaust emission, radar calibration, energy system, air-conditioning and fluid, and etc., together with supporting software, collectively constitute comprehensive and distinctively advantageous digital diagnosis modules. If the domestic auto service chain vendors want to further deeply set foot in the non-standard auto maintenance business, highly-efficient digital diagnosis tools are extremely important competences and tools. However, these tools have strong industry barrier, the leading technical giants have absolute block-out advantages and are piloting the digital diagnosis trend in the industry.



Endowment of AR/VR digital technology training

In addition, the model enterprise as an auto technology and complete vehicle and spare parts supplier is also continuously exploring to endow personnel technology training by making use of cutting-edge digital technology. For example, Bosch applies AR technology to training of auto after-sales technology, vividly delivers auto knowledge to the trainees at the spot or remotely, which can be used as an aided teaching tool for technical training of auto manufacturers and the auto major in colleges and universities to make trainees rapidly master the latest auto-related technologies and maintenance skills and effectively improve training efficiency.



Digitalization reshapes "goods" – ultimate flatness and good faith which is not seen for ages

The supply chain of auto parts in China adopts a regional and multi-level distribution model for ages. Too many levels result in higher markup percentage of comprehensive turnover between the manufacturer's price and the sales price of terminal service network as well as costly price of auto parts sustained by consumers for a long time. However, expensive costs of parts do not equal to quality-assured products. Excessive competition drives a number of sellers to sell counterfeit and inferior auto parts for existence and for making more considerable profits. These thorny problems are expected to be rapidly improved in quality in virtue of digitalization, which includes the following aspects:

- **Ultimately flat supply chain:** Digitalization era enables information to become extremely transparent and greatly reduces costs of information interaction and supply & demand matching, furthermore, the pain points of traditional supply chain for which both M2B2b2c and S2c models focusing on its improvement will form the power of control over the upstream parts manufactures in virtue of leading supply chain platform of digitalization platform and by means of fast accumulation of sales volume of certain varieties, and propel the leading brands with powerful brand force to provide ultimately-flat support for supply chain platform by means of multiple-brand strategy (existing brands in the market are difficult to directly transfer to M2B2b2c and S2c models by separating from the distribution model).
- **Ultimate demand forecast on terminal auto parts:** Endowing downstream terminal service network by digital SaaS, mastering data of purchases, sales, inventories and consumptions of downstream network. Upon completion of high-quality forecast on terminals by using the digital model, realizing ultimate collaboration of production and sales, achieving optimal in-depth administration of the aggregate inventories for aggregation of parts manufacturers, supply chain and channels so as to achieve ultimate efficiency promotion of inventories and reduce purchasing costs of final consumers by reducing costs of advance funds resulting from reduction in inventories.
- **C2M reverse customization:** establishing e-commerce platform by digital touch point to effectively collect feedbacks from consumers, especially complete feedback cluster analysis via the touch point rating system and the embedded social intercourse environment data and identify product optimization or demands of special population. Based on that, we may reversely complete product optimization upwards, push reversely-optimized products to consumers based on their tags, fall in with the demands of consumers and bring about more accurate marketing.
- **Ultimate demands satisfaction rate for auto parts:** highly-digital terminal orders and collection of demands in combination of location information provided by mobile devices can enable the value chain integration party to realize ultimate optimization. These data can firstly fulfill optimization of multi-level warehouse locations and location portfolio; secondly form ultimate optimization for urban distribution capacity; in addition, make relatively accurate forecast based on historical data of terminal demands and realize pre-judgement on inventories for consumption. Integration of these capacities can greatly improve consumers' demands satisfaction rate of disposable auto parts, and realize more economical input in establishment of urban distribution capacity, establish more powerful highly-frequent and temporary distribution capacity in order to complete demands satisfaction and distribution of auto parts in a shorter time for planned purchase or temporary purchase by consumers.
- **Visible genuine goods at a fair price:** forming tracks of digital nodes from production end to retails end by taking use of digital technology to enable the consumer to complete inquiry of the source of auto parts, which have settled the trouble of consumers' uncertainty about true or false auto parts to a great extent.

Digitalization reshapes "Payment" – from liberating accountants to Fintech endowment

The concentration ratio of domestic maintenance industry is extremely low for a long time, because two inseparable pain points with "Payment" are important constraints. The one is that before the advent of digitalization era, aftermarket chain model cannot establish interactive relations with customers by digitalization and directly acquire terminal consumers' demands online and make payments for consumption (i.e., commodity flow and capital flow cannot be digitalized), resulting in unavoidable leakage and venting problems of commodity flow and capital flow, high management costs, low scale effect of business and obvious ceilings for chain volumes. The other one is that medium and small-sized enterprises are difficult to obtain sufficient financing support from financial system and has low efficiency for completing expansion depending on internal growth; however, with development of digital technology, the above two pain points are expected to be fundamentally improved in the future, which includes the following aspects:

- **Digital orders and payment:** Collecting consumers' demands online by digital customer operating platform and realizing online orders and payment with high-penetration rate, greatly reducing the unavoidable "leakage and venting" by former off-line orders and payment, settling the financial risk of duty encroachment to a great extent, realizing account automation and digitalization, and reducing investors' investment in financial administration resources.
- **Endowment of digital finance:** It is difficult for light-asset of traditional maintenance service network to obtain financing support from traditional financial system due to lack of collaterals in effect. However, under the new trend, supply chain and platform party provide digital customer operating platform and payment platform for terminal outlets, in combination of obtaining data of purchases, sales and inventories, as well as completing credit granting of supply chain finance by making use of transactions and data of purchases, sales and inventories and making rapid development of financing funds acquisition by maintenance service network.

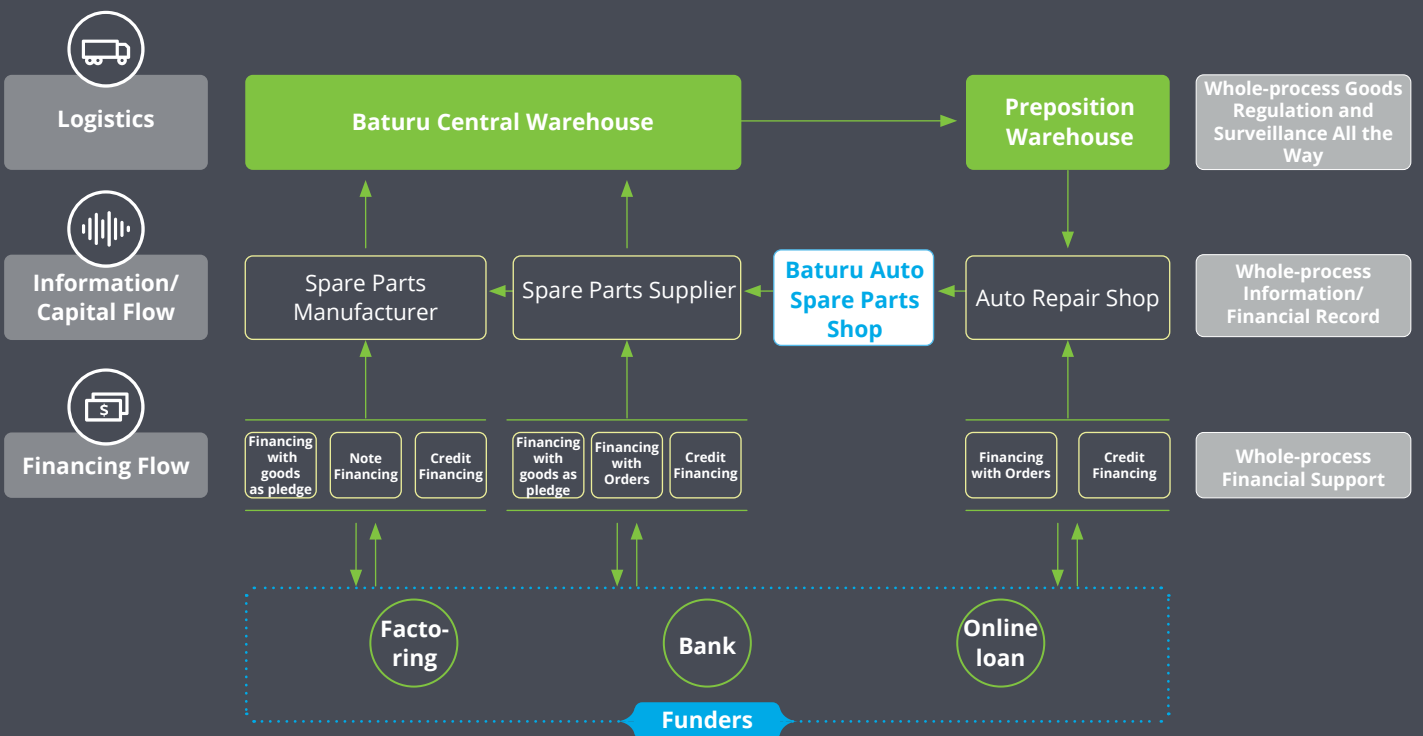


Having ulterior motives - Enlarge new idea for data realization

As auto aftermarket infrastructure platform for providing B2B service of auto parts, Baturu has realized a closed loop of information flow, logistics, capital flow and data flow by providing standard and intelligent solutions for online transactions and supply chain service of warehouse and distribution integration. Authentic data of business closed loop has deemed as the base of core credit-granting data by various types of Fintech financing platform and as an important and supplementary financial channel of traditional banks. Supply chain based on data of business closed loop has good development prospect, which can effectively support rapid expansion of upstream and downstream participants in the aftermarket.

As a piloting enterprise in B2B auto parts industry, Baturu has combined a third-party fund to release a variety of financial products for auto parts manufacturers, vendors and terminal customers based on its own data capacity in order to settle funds turnover demands for each end. Shouxinbao (credit granting), a periodical settlement tool provided for large-sized maintenance chain stores and 4S stores with strong purchase strength and good faith has helped thousands of maintenance enterprises on the platform to settle the problem of purchasing funds and is highly praised by customers.

Figure 3.3-1: Diagram of Baturu business model



Digitalization reshapes "Customer" - quality assurance, one-stop convenience and comfortable experience

Under the traditional model in the past, relations between operators in the auto maintenance industry and customers lack effective process administration and operating media. The auto service network mainly adopts the model of customer attraction by stores, price of auto parts and service lacks transparency, and consumers have a strong sense of distrust over the third-party auto service network. However, with development of digital technology, more and more companies start to make use of digital means and tools to fulfill disruptive improvement of customer experience. The topic of customer experience by digital endowment mainly includes the following core aspects:

- **Transparent and quality-assured customer experience:** remarkable improvement of traditional end-to-end experience is available by making use of digital technology, for example, completing transparent reservation and confirmation of service price by digital platform, using digital checkout equipment to complete quantified vehicle checkout, and providing experience of tracing to the source of genuine goods by digital logistics tracking and information disclosure.
- **Ultimately convenient service experience:** Providing ultimate end-to-end convenient experience by making use of digital platform and functions, for example, online purchase of auto parts, digital payment, real-time disclosure of working status as well as reservation, door-to-door replacement or recovery of storage battery and etc.
- **Quality-assured and comfortable brand interaction platform:** Designing and developing a platform for interaction between brands and customers based on digital technology, for example, building main consumer interaction platform by making use of APP with high interactive potentiality, including functions such as brand exposure, brand's service demands matching, brand's topic social intercourse so as to build a digital platform for direct interaction with customers.
- **Transparent vehicle management:** Comprehensively and transparently presenting vehicle status by

making use of data generated from standard process digitalization, for example, monitored data for each return to the factory such as wear-down status of brake pad, battery voltage, tire wear, status of air suction and air-conditioning filter, assisting to achieve transparent management of man-vehicle relation from the standpoint of customers.

Digitalization reshapes "Store" - Utmost Standardization and Asset Efficiency

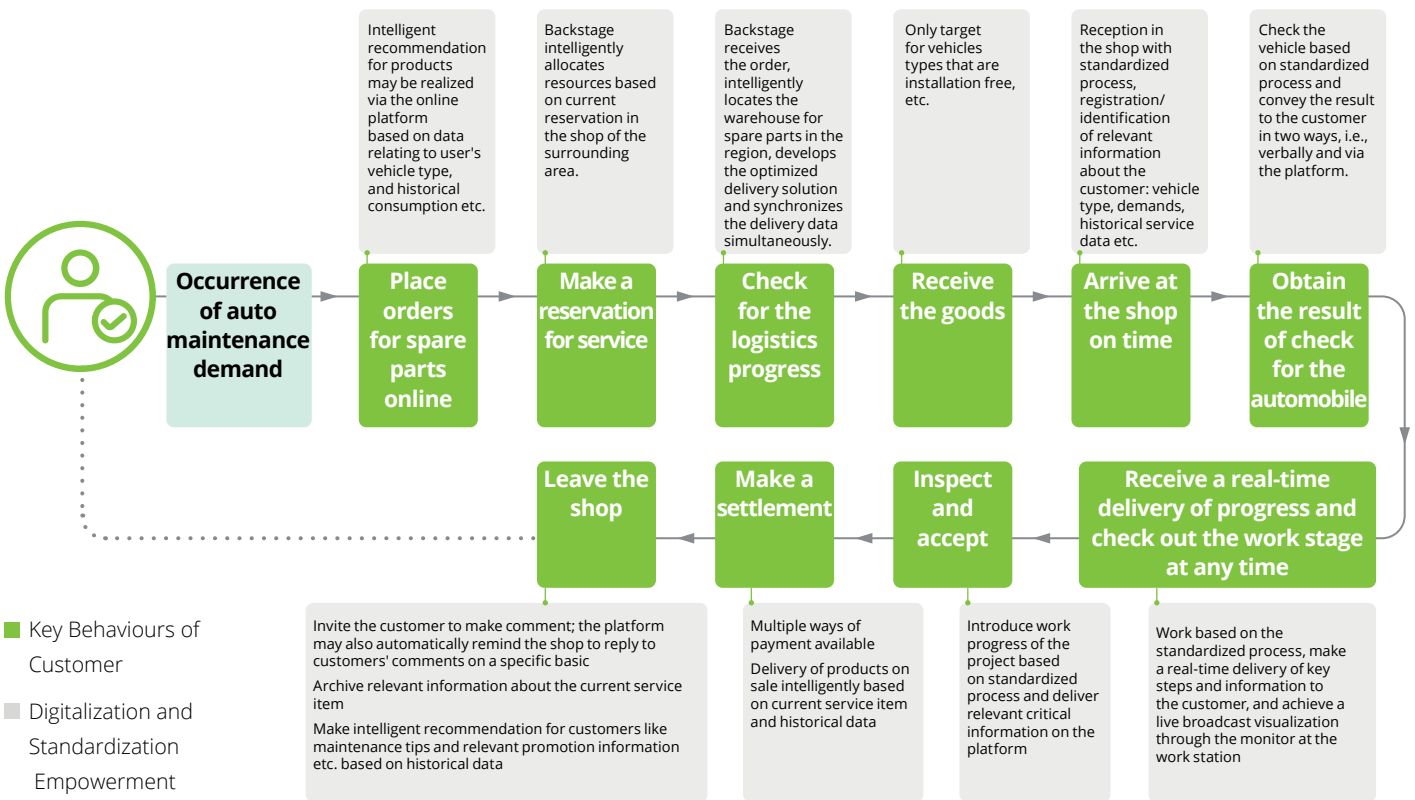
For the traditional maintenance service network which is not backed by digital solution, a low standardization of experience in the network and asset inefficiency are prevalent pain points of the industry. However, certain leading intelligent maintenance chain store service brands have obtained breakthroughs in the following aspects by taking advantages of digitalization in recent years, removing the long-standing core pain points:

- **Digitalization facilitates standardization of experience:** Using digital tools in combination of process for reproduction, leaving digital footprint for each step in the process, so as to develop obligatory standardized experience activities, may overall decouple reliance on the network staff's subjectivity of performance and realize utmost standardized customer experience in the course of services, compared with the traditional network with non-digital experience patten in the past.
- **Digitalization facilitates efficient and clear network operation management:** A highly standardization and efficient guidance, realization and supervision of various operation matters in the store is achieved based on the standardization system and corresponding digital empowering system and store surveillance etc., which not only greatly weakens reliance on managerial workers in the store but also achieves improved management efficiency.
- **Digitalization facilitates the realization of utmost asset efficiency:** For the network in operation, highly digitalization and intelligentization in the management of resources in the store may be achieved based on the digitalization of operation and customer services in the store, for instance, intelligent allocation of work stations based on customer's appointment for the day as well as onsite service type, enables higher work station utilization. Moreover, for the network expansion, the

standardization of operation in the store empowered by digitalization provides efficient "duplicate template" for network expansion, enables rapid start-up and development of a new store. Besides, digitalization empowerment also allows more accurate site selection for network layout. Identification of uncovered areas with demands, realization of more intelligent and accurate assessment on the potential deployment area and improvement of deployment quality based on location data from customers' historical orders, contributes to the achievement of higher asset efficiency of a brand new network at the early stage of commencement.

- **Digital compliance empowerment:** The completion of digitalization of traffic and payment via the digital online reservation platform and the digital payment system can greatly mitigate the risk associated with compliance under the traditional model, allowing the investor and manager of the store to accomplish store management better with economies of scale.

Figure 3.3-2: Diagram of journey and experience highlights for customer in a digital smart shop



Source of Data: Interviews with industrial experts, sorted by Deloitte



Digital store operation system is a breakthrough of management at scale, upgrading the five elements of "Man, Goods, Payment, Customer and Store" comprehensively.

Among S2c Model Enterprises, Tuhu has obviously sped up in the deployment of network in the past year, with leading network duplicate capability, mainly due to its gradually mature system empowering the digitalization of the "store", forming valid template. Tuhu's intelligentization of stores is principally reflected as follows:

- **Standardization of Intelligent Process:** It not only sorts and improves its self-owned service process, but also takes advantage of digital hardware in the process, which makes standardization of mechanics a mandatory process.
- **Digital Payment and Settlement in the Store:** On the one hand, an electronic settlement is formed by highly-penetrated APP, on the other hand, the scope of services and spare parts are proactive, with the scope of services highly standard and transparent, leading to digital payment with quality and penetration rate, having avoided risk of compliance on cash settlement and lowered financial management resource input of the store at the same time.
- **Store Management Empowered by Digitalization:** Tuhu's digitalization based on whole chain may realize all-round data collection of store management, using its independently

developed "LanHu" system, the store operation management may be empowered by digitalization on the perspective of customer management, maintenance mechanic allocation, workshop management, inventory management and operation analysis etc.

- **Intelligent Site Selection:** Tuhu has an investor return cycle leading the industry, which is also a remarkable advantage of economies of scale for S2c enterprises. As for the site selection, Tuhu may use numerous data from historical orders to identify a potential blank area and identify the location for network deployment in consideration of existing asset efficiency. Accurate identification of demands enables Tuhu to obtain better investment recovery cycle and attract investors of higher quality compared with the traditional off-line chain stores.

In addition, as a representative model enterprise of S2c, Tuhu emphasises "Human-oriented" development concept, and develops care and innovation towards both store mechanics providing services and end consumers different from the traditional model, such as:

- **Focus on talents' growth and nurture more standardized talents for the industry:** Tuhu has been investing a lot of resources in sorting out the industrial technique standards and launched "Honest service alliance -service standards open platform" in cooperation with people.cn, released technique publication through the self-owned Lanhu App, so as to meet its own as well as the industrial practitioners' demand for technique publication and promoted to break the technique barrier and entitle mechanics with more opportunities to learn and grow. Besides, a cloud learning platform leading the industry including a number of public courses is also constructed in the App, which is open to serve mechanics and staff in the chain network under Tuhu brand as well as the whole industry. Staff may select the courses they are interested in based on their own capability and need. It helps practitioners learn the latest technique courses that advance with the times and achieves digitalization cultivation of talents ahead of the industry.
- **Customer-oriented, focus on solving consumers' core pain points:** At present, one of the most concerned core pain points of consumers in China maintenance market is the issue relating to of product authenticity. Tuhu has always been dedicated to reassured consumption, worked out "One Product One Code" goods whole chain tracking system with Tencent, together with Shell HELIX. By granting access to tripartite systems, the above activity makes Tuhu the first in the industry that realizes the whole chain tracking of Shell lubricants from factory production, in-transit transportation, and channel inventory to the end consumers. Consumers can scan the QR code for oil authenticity and traceability, realizing the demand of reassured consumption.

3.4 Five Required Courses for Managing the Future in the Maintenance Market by Shifting Back to Basics of Business

Throughout the change of the aftermarket in recent years, it has been surging forward vigorously. The transformation contains alterations of the value chain pattern, changes of the business model, optimization iteration of core elements of the industry, etc. However, for participants from all walks of life wishing to manage the future market by shifting back to basics of business, it is suggested that the following five capacities should be constructed on the underlying core competencies:

Capability of Data Acquisition and Data Increment

The transformation currently taking place in the industry is essentially a business revolution around data. Alterations of the value chain and changes of the business model analysed above need to center on data without exception. The essence is to further master and control the data of the upstream and the downstream as the right to collect and control data is the invisible "means of production" for businesses in the future, while revolutions failing to achieve a complete integration of the upstream and the downstream data are traditional with limited competitive sustainability. Nevertheless, structured and scaled data acquisition is heavily relied on digital tools, and auto aftermarket involving gargantuan offline entity services asks for more diversity in the capability of digitalization including traditional online capability of digitalization, combination of offline hardware and software in a large number and capacity of digitalization of Internet of things. In terms of this, practitioners of some traditional industries are encountered with great challenges, and how to participate in the revolution of the industry based on digitalization by quickly building the capability of digitalization becomes the unavoidable course for enterprises in the industry at the moment.

Capability of Supply Chain

Integration patterns for various value chains under conception at present in the aftermarket contain supply chain without exception, both core pain points of the current industry and sources of enormous commercial values. In addition, from the perspective of long-term values, the supply chain serves as not only the channel for goods of

the upstream and the downstream, but also the bridge for data flow. Only when we are equipped with valuable supply chains can we get a chance to complete the acquisition and the connection of upstream and downstream data.

Maintenance Technology and Criteria

The downstream market of auto maintenance industry in China has always remained at a low concentration level with evident ceiling for scale expansion under the traditional model. To break the ceiling and achieve scale effect, the key underlying element lies with the construction of standardized maintenance technology and criteria.

Capability of Construction for Industry Ecology

In spite of transformations of auto aftermarket over the years, it is far behind other consumer goods industries on account of the higher difficulty in model adaptation due to the complex ecology of auto aftermarket compared to other consumption/service industries. From the model standpoint individually, there are plentiful cross-industry model practices, and companies both newly-established and long-established attempting the model of "plagiarism" in the past few years have shown a tendency to enter the market at a trot, but most of them are unable to run through the business model fast, which is worth pondering. In auto aftermarket, the core principle of ultimate model adaptation is to return to the essence of the business, creating values for participants in the complex ecosystem that props up the business model.

Iterative Innovation

At present, auto maintenance industry is at the stage of auto maintenance industry transformation, and enough agility of enterprises involved in the capability of iterative innovation are required both for macro model and micro implementation. Besides, the management system of enterprises has to meet the need of and promote iteration by innovation. Capabilities of institutional support includes flexibility of corporate strategy, agility of organization, flexibility of capital raising, dexterity of project incubation, etc.

Chapter IV

Suggestions for Enterprises in the Auto Aftermarket

Aftermarket, especially the maintenance market, is a late starter of change in China's large economy, which is unrelated to the complex ecological situation as mentioned in Chapter I and brings both challenges and opportunities. Under the future development trend, how should companies in different positions of the value chain seize on opportunities and cope with future challenges must be topics that our readers are most interested in. In the next, we will share with you suggestions on future development in combination with research of the trend from the upstream to the downstream of the value chain.



Upstream Enterprises of the Value Chain: Active Exploration of New Channel and Participation in Vertical Integration by Relying on Self-Positioning Advantages

Actively Embrace Innovation Model of Product Distribution

In the Chinese market, distribution models in the midstream of auto parts, no matter whether it is the M2B2b2c model or the S2c model, will be flattened. Structural opportunities lie ahead for new models of distribution, and thus it is a worthwhile direction of development to participate in the leading league of interest with M2B2b2c model or S2c model adopting multi-brand strategy or differentiated product line strategy.

Positively Construct the Direct-to-Consumer Capability

The ascent of online penetration rate of auto parts is an inevitable trend as it has become a necessary choice to construct the direct-to-consumer capability from the perspective of channel strategy and a strategical choice as well from the perspective of completing customer insights by collecting related data.

Vigorously Engage in Non-Standard Maintenance Businesses with One's Own Strengths

A clear direction for model change has not yet taken shape in non-standard major repairs and post-accident services with a low market concentration. For leading enterprises

in the midstream and the upstream of value chains such as leading auto makers or auto part manufacturers, they shall take initiatives in deploying non-standard maintenance businesses exploiting advantages of the technology and the supply chain at the dawn of market change.

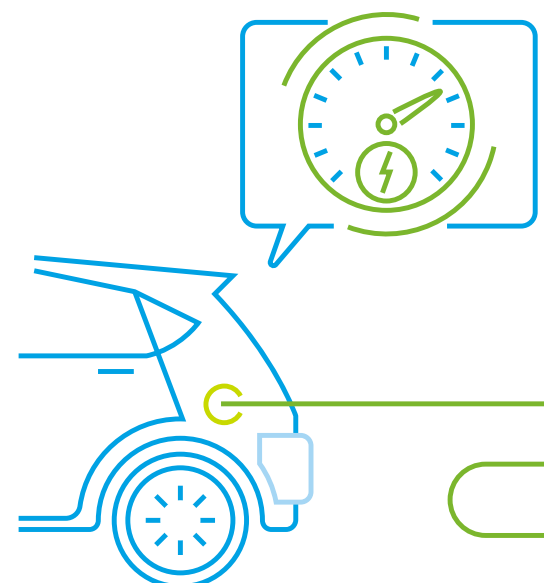
Midstream Enterprises of Value Chain: Active Exploration of New Opportunities for Data Realization by Deep Endowment and Enhanced Vertical Integration

Gain Control of Terminal Data by Deepening B2B Endowment Values and Constructing Competitive Edges

Future market has an expectation for supply chain that goes beyond itself with endowment to become the core value. Proceeding from the core pain points of consumers and downstream auto repair factories, to gain a larger market share and a broader living space, enterprises of the future supply chain must further upgrade the capability of digitalization and improve the endowment of the platform over downstream Tier-2 auto repair factories. In addition, by enabling the creation of endowment value, enterprises shall further build the capability of data control and gain control of terminal data taking advantage of downstream interlocking instruments. In the future, the profitability of B2B supply chain platform derives highly probably from businesses of data realization.

In-depth Vertical Integration as the Wisdom Bridge to Merge Product and Distribution

Supply chain as the channel for goods transfer in the upstream and the downstream should play the role as data intermediary. Enterprises of the supply chain will gain access to an increasing number of terminal data of consumer demands by further energizing the downstream enterprises which promote and guide the upstream enterprises towards a better balance between production and sales. Especially for some major categories, production and sales in the upstream, the midstream and the downstream of certain categories are integrated based on statistics of the supply chain, contributing to a more productive value chain solution that brings higher values.



Exploration of Fintech Opportunities Relying on Supply Chain Data Capacity

In the short and midterm, the best scenario for data realization is finance. Back to auto maintenance market, financial demands which cannot be met even by financial system of large banking system among upstream auto parts manufactures, downstream service networks or terminal consumers. However, financial opportunities come after the realization of end-to-end business and the access to consumption data by enterprises of the supply chain.

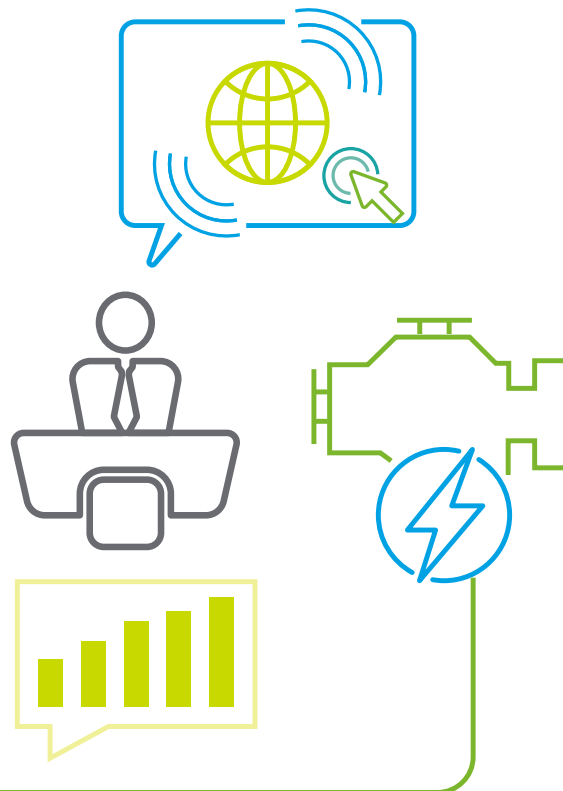
Expanding Insurance Businesses while Consolidating Non-Standard Businesses

At present, new model transformations in the industry mainly focus on maintenance businesses while the fundamental trend of transformation has not taken place in non-standard maintenance businesses. As the impact of maintenance businesses on large and medium-sized comprehensive auto service chain stores is limited, the primary direction remains as enhancing the insurance renewal capacity and local vehicle resource development.

Downstream Enterprises of the Supply Chain: Inevitable Trend of the Industry to Upgrade the Capabilities Driven by Digitalization and Standardization

Actively Seeking Supply Chain Platform Endowment

Regardless of the current market standing of various terminal networks, seeking supply chain platform endowment is a necessary trend as downstream chain brands domestically are hard to realize high-quality supply chain integration reversely relying on their own volumes.



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