

Distribution of the Dealer and Repair Parts Management System of a Japanese Multinational Car Manufacturer in China: Focusing on the Case of GAC Toyota Motors

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중국의 일본계 자동차 메이커 딜러의 분포와 수리 및 보수용 부품의 관리체제
- 광차 도요타사(社)의 사례를 중심으로 -

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Abstract : In this study, we examined the distribution of dealers and the repair parts management system of a Japanese car manufacturer in the Chinese market in looking at the case of Toyota. We conducted our research by obtaining information from a GAC Toyota dealer about the current distribution of dealers and locations of warehouses throughout China, as well as the status of stocks and the distribution system for repair and maintenance parts. The results of our investigation showed that although GAC Toyota has 437 dealers throughout the country, there is an imbalance in distribution towards the coastal areas, after the population ratios and other measurements are factored in. Therefore, it can be said expansion towards the inland regions, where demand for automobiles has increased in recent years, has been stunted. On the other hand, there is a high correlation between gross GDP by region and the number of stores, and it can be pointed out that the company prioritizes the sale of high-priced vehicles in major coastal areas where the economy is large, rather than selling low-priced vehicles for inland consumers with a relatively small economic scale. The company also has difficulty in securing dealers that can provide sufficient after-sales service. According to the regulations of GAC Toyota, the company require dealers to have at least 1,500 repair and maintenance parts in stock. Also, when exchanging maintenance parts, GAC Toyota's emphasis is on increasing customer satisfaction by giving sufficient explanations for customers and obtaining consent from them. As a result, the company's dealers need financial resources to continue their business from a long-term perspective. However, it can be pointed out that such dealers are limited, and it is difficult to distribute profits among manufacturers and dealers.

Key Words : dealer, repair and maintenance parts, delivery system, GAC Toyota, China

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요약 : 본 논문은 광차 도요타사를 사례로 한 일본계 자동차 메이커의 중국 시장 딜러 분포와 수리 및 보수용 부품의 관리 체제에 대해 검토한다. 조사 방법으로, 광차 도요타사의 어느 딜러를 통하여, 딜러의 전국적인 분포 상황과 부품 물류창고의 입지 상황, 수리 및 보수용 부품의 재고 상황과 배송 시스템 등에 대한 정보를 입수했다. 조사 결과로, 당사는 전국에 437개 점포에 딜러가 있으나, 인구비율 등을 고려하면 점포의 분포가 해안 지역에 치우치고 있으며, 근년 자동차의 수요가 높아지고 있는 내륙 지역 진출이 늦어지고 있다. 한편으로, 지역별 GDP 총액과 점포 수 사이에 높은 상관관계가 있으며, 당사에서는 비교적 경제규모가 작은 내륙 지역의 소비자를 대상으로 한 저가격의 차종을 판매하는 것보다, 경제규모가 큰 해안 지역의 대도시에서 고가의 자동차를 판매하는 것을 중요시하고 있다. 그리고 당사의 점포수가 확대되지 않는 요인으로써, 당사가 중요시하는 충분한 사후 서비스를 운영하는 딜러를 확보하는 것이 어렵다는 점이 꼽힌다. 당사에서는 딜러에게 수리 및 보수용 부품 중, 최저 1,500점 이상의 재고를 확보하도록 하는 방침을 살피고 있다. 또한 보수용 부품을 교환할 경우, 고객에게 충분한 설명을 하는 것과 동의를 얻는 것으로 하여금 고객 만족도를 높이는 것을 딜러에게 요청하고 있다. 그렇기 때문에, 당사의 딜러에게 장기적인 시점으로 사업을 계속할 수 있는 자금력이 필요로 하지만, 이러한 딜러가 한정적인 점과 메이커와 딜러 사이의 이익 배분이 어려운 점이 지적된다.

주요어 : 딜러, 수리 및 보수용 부품, 배송 시스템, 광차 도요타사(社), 중국

1. Introduction

In recent years, the global automobile industry has grown significantly in emerging Asian countries. Especially since China joined the WTO in 2001, automobile manufacturers from all over the world have set up production bases in China, and the number of cars produced has increased rapidly. In 2000, China produced only 2.7 million cars, while in 2009 the production reached 13.79 million, becoming the world's largest producer, a status it has since held for seven consecutive years (China Automobile Technology and Research Center and China Association of Automobile Manufacturers, 2016).

On the other hand, due to the increasing trend of globalization, the competition among enterprises in the market is also intensifying (Porter, 1986; Asakawa, 2003). Until the 1990s, Japanese enterprises were highly competitive in the world market in industries such as electric machinery. However, after that, with

the intensified competition from other developed and emerging countries, the problem of a declining market share for Japanese enterprises in the global market became serious.

In the auto industry, although Japanese companies remain highly competitive in the world at present, in terms of the Chinese market, their vehicle sales and market share are at a relatively low level compared with German Volkswagen and U.S. General Motors.

From the perspective of the manufacturing industry as a whole, many Japanese companies in the past entered China for cheap labor, to produce and export products without paying much attention to sales in the Chinese market (Abe and Fang, 2010).

However, in recent years, Japanese companies in China have turned to "market-oriented" development. Kawabata (2006; 2010), Takahashi (2008), Yahagi (2009), Yu (2010) also conducted continuous research on issues such as expanding sales channels of business departments, establishing partnerships with

retailers, and recruiting and training personnel. In this case, the relationship between the local production system of the expansion enterprise and the local marketing strategies has attracted attention.

As for the manufacturing enterprises, there are two ways to deal with markets around the world: (1) localizing products to meet the needs of different regions; (2) using rules that are applicable to any place in the world to achieve globalization. There has been much discussion on this issue. Generally speaking, in the process of globalization, the necessity for manufacturers to provide products common to all parts of the world is increasing. To some extent, unless standardized products are developed, we cannot make full use of the advantages of “economies of scale” through mass production. However, on the other hand, ignoring the characteristics of consumers in every market in the world will make it difficult to gain market share in every country (Porter, 1989; Asakawa, 2003)¹⁾. In addition, Setsu (2010, p.7) also pointed out that companies facing global integration, companies targeting localization and companies that must pursue both also have different characteristics depending on the type of industry.

Generally, industrial products are produced and sold by meeting the needs of local customers. However, automobile products are special and different from other industrial products, and the production and sales also need different countermeasures from other products.

That is to say, since there are many kinds of parts that make up the automobile and the parts are highly interdependent, special parts are needed in large proportions, which is also a feature of the automobile. Therefore, it is difficult to design and develop products according to the needs and characteristics of each individual market. Fujimoto (2003) divided

the manufacturing industry into “modular” and “integrated” (running-in type) types and claimed that Japanese enterprises are competitive in “integrated” manufacturing. Fujimoto (2003) pointed out that “integrated” manufacturing means “it is an integration of design, manufacturing, sales and service, closely linked and repeatedly finely adjusted to create the best integrated product”, which has been most effectively practiced in Japan’s automobile industry. In this way, Japanese automobile manufacturers adopt an integrated development and production system to improve the performance and quality of their products, but the number of parts required for repair and maintenance will also increase due to the many special parts available for different types and models of integrated products.

That is, in general, vehicles are nowadays composed of 20–30,000 parts (Japan Automobile Manufacturers Association, 2015). Even the same manufacturer needs to use customized parts for different types of vehicles, so it is necessary to establish a mechanism capable of allocating different types of parts when repair or maintenance is being carried out at dealerships. Therefore, we should not only discuss the parts allocation system in the production process, but also discuss how the parts supply system after sale affects the distribution policy of finished cars and the distribution of dealers.

In economic geography, many studies on overseas parts purchasing by auto manufacturers and inventory management mainly focus on parts allocation and inventory management in the production and assembly stage, as well as the characteristics and geographical distribution of suppliers (Saito, 2001; Tomozawa, 2004; Une, 2009; Song and Abe, 2012). The structure of the logistics system in the production process of overseas Japanese automobile manufactur-

ers like this has been studied in management science and economic geography. However, in recent years, the expansion of sales and the improvement of after-sales services in overseas developing countries have also become an important issue. It is not only necessary to pay attention to the parts allocation system in the production process, but also necessary to discuss the location and distribution of distributors, the parts allocation system in the repair and maintenance stage after sale, inventory management, and after-sales service methods. In particular, in allocating and distributing repair and maintenance spare parts, regardless of the order frequency, orders are too small and irregular, all of which come with their own idiosyncratic difficulties in the production process, not to mention, the distributors have to distribute all over the country in the allocation of spare parts.

In the first half of 2010, with the rapid expansion of China's auto market, Japanese manufacturers' share declined, and some people began to question the sales strategies of Japanese auto manufacturers in China. Among them, many people advocate focusing on providing low-cost cars according to local needs (Seki, 2013). Seki (2013) said that concentrating limited management resources on low-profit businesses in pursuit of market share will hinder the sustainable development of enterprises. Therefore, Japanese manufacturers should target high value-added cars and, to improve customer satisfaction, further enhance the quality of the after-sales service. Especially in China, with the increase of car ownership, although the demand for new automobiles will slow down, the demand for alternative cars may further increase. So, the quality of after-sales service should also be improved in order to win those alternative car customers (Seki, 2013).

As the above discussion indicates, when automobile

manufacturers open up overseas markets, it will cause problems in ensuring profit margins, etc., if they only develop, produce and sell products catering to the needs of consumers. In particular, by investing in low-priced products that are nominally in line with local demand or selling them at reduced prices, the profit margins and brand strength of enterprises and products may decline, so the impact on the overall business strategy of enterprises should also be considered (Abe and Jin, 2014).

Past research indicates that, although there are many studies in Japan on the development of auto dealers and sales systems of finished cars, both at home and abroad (Shioji, 2002; Shioji *et al.*, 2007; Ishikawa, 2009; Yoshikawa, 2012), not many studies have been conducted into the inventory management and distribution system for repair and maintenance parts. Meanwhile, in China, due to the concern about JIT logistics being introduced into China, there are a lot of studies on repair and maintenance parts distribution, as well as the case studies of Toyota involved in this research. There are also studies made by Huang and Wu (2013) and Jin (2014). However, few studies have explored the relevance between spare parts inventory management together with after-sales service and the deployment of dealers. This issue can also turn into a worthwhile discussion on economic geography.

In addition, as Kawabata (2006; 2010) and Gao and Abe (2017) have discussed, when manufacturers develop auto dealers, the cost of the manufacturer supervision on the customer service methods by dealers (monitoring cost) and how to distribute profits between the manufacturer and the dealer are also worthwhile discussing.

For these reasons, this article will focus on the sales strategies of Japanese auto manufacturers in China,

as well as the regional deployment of dealers and the management system for repair and maintenance of spare parts. Specifically, this study will focus on the case of GAC Toyota, one of Toyota's local subsidiaries in China.

2. Research Methodology and Enterprises Investigated

The research methods analyse the statistical data published by Toyota and the Chinese government, and an interview survey conducted between March 2015 and May 2018 with senior executives and dealers in Toyota's local subsidiaries. The data and information obtained in the interview have been collected and analysis has been conducted. The interview survey was mainly conducted with director A and general staff B, sales staff C of the dealer's after-sales service department²⁾ in Shanghai, as well as D, who was dispatched to Toyota Motor (China) Investment Co. Ltd. as a Japanese employee, and E, a technician in the repair and maintenance department of FAW Toyota Motor Sales Co., Ltd., as a consequence of which some internal information and materials have been collected.

Next, the general situation of China's automobile industry and Guangzhou Toyota Motor Co, Ltd. (GAC Toyota) will be introduced as the object of study and the survey object respectively. When foreign companies entered the Chinese auto market, due to the restrictions of the Chinese government, they were not allowed to be the sole investor in the establishment of companies in China. They had to establish joint ventures with Chinese companies of which Chinese companies had to contribute more than 50%

of the investment. The survey subject of this paper is GAC Toyota, which was incorporated by Toyota Motor Corporation and Guangzhou Automobile Group Co., Ltd. (GAC) in 2004. Because foreign companies have been able to set up joint ventures with up to two Chinese companies, since 2002, Toyota has established full cooperation with FAW Group Co., Ltd., one of China's largest local auto manufacturers, to set up joint ventures to operate in China (Yanai and Abe, 2013; Fujikawa, 2014).

Different models are produced and sold in these two joint ventures, but the two companies will cooperate when allocating and distributing repair and maintenance parts (Jin *et al.*, 2014). In addition, the joint venture company with FAW Group has set up factories in Tianjin and Chengdu in Sichuan Province in the inland areas, in addition to Changchun in Jilin Province in the Northeast. On the other hand, GAC Toyota has only one factory in Guangzhou (Guangdong Province). This paper will focus on the case of GAC Toyota to explore the above issues.

Looking at the trends of other foreign companies, by 2003, Shanghai Volkswagen and FAW Volkswagen, had been established jointly by Volkswagen and Chinese enterprises, and was the first joint venture to start up local production of passenger cars, occupying a large market share. However, after that, almost all of the world's leading manufacturers also began to produce automobiles locally in China, and later Shanghai General Motors and others expanded their sales, too (Marukawa and Takayama eds., 2005). In addition to General Motors Company especially, it is said that Japanese manufacturers such as Nissan are actively expanding market share by introducing low-price models for inland areas and young people³⁾.

At the same time, Toyota's sales and share in China are relatively small compared with other major manu-

Table 1. Top 10 companies in automobile sales in China Unit: Ten thousand

2009		2012		2015	
Shanghai VW	70.81	Shanghai GM	126.99	Shanghai VW	180.56
FAW-VW	66.92	FAW-VW	123.87	SGMW	179.76
Shanghai GM	66.82	Shanghai VW	107.09	Shanghai GM	172.5
Beijing Hyundai	52.1	Beijing Hyundai	68.81	FAW-VW	165.02
Dongfeng Nissan	45.93	Dongfeng Nissan	64.22	Changan	111.33
BYD	44.84	Changan Ford	49.18	Beijing Hyundai	106.28
Chery	40.93	Geely	46.01	Dongfeng Nissan	102.61
GAC Honda	33.72	Dongfeng Citroen	44	Changan Ford	86.87
FAW Toyota	33.47	Chery	40.66	Great Wall	75.32
Geely	32.91	FAW Toyota	37.33	Dongfeng Citroen	71.07

Source: Website of the China Association of Automobile Manufacturers(<http://www.caam.org.cn/>, Reading on January 28, 2018).

facturers in the world. According to the passenger car sales data from 2009 to 2015, Japanese manufacturers such as Toyota and Honda tended to have low sales growth rates and market shares (Table 1). In recent years, it is said that China’s demand for cars in inland areas has been increasing due to economic development, but Toyota has not attached great importance to low-cost vehicles for inland areas and young people (Seki, 2013).

On the other hand, according to the consolidated financial data of Toyota’s head office, from 2010 to 2015 they maintained a high profit margin in Asia. According to Table 2, the most stable region for Toyota to achieve high profit margins is Asia. Although in terms of sales and profits, there are some years in which Japan and North America surpassed these regions. However, in terms of profit margin, Japan only surpassed Asia in 2014 and 2015⁴⁾. The profit margin in Asia seldom fluctuates on a yearly basis, and it can be said that it has maintained a stable profit.

Of course, sales and profits outside China are included in the sales and profits in Asia, so we should consider the profit margins of Toyota’s local branch,

GAC Toyota, etc. However, since GAC Toyota did not release profit or profit margin data, we will analyze the profits and profit margins of transportation equipment manufacturers (including parts manufacturers) in China.

First, according to the “Basic Survey on Overseas Business Activities” of the Ministry of Economy, Trade and Industry, when calculating the average profit margin of subsidiaries of transportation equipment manufacturers (including parts manufacturers) in China, the average profit margin was calculated to be 10.2% in 2010, 8.4% in 2011, 7.8% in 2012, there is no data for 2013, 8.1% in 2014 and 9.1% in 2015⁵⁾. Although profit margins tended to decline between 2011 and 2013, when Sino-Japanese relations deteriorated, they tended to recover later.

Besides, considering the profit margin of Guangzhou Automobile Co., Ltd.,⁶⁾ a joint venture partner, due to the deterioration of Sino-Japanese relations, it dropped to a low level of 3.9% in 2011, but rebounded to 10.3% in 2013, then to 11.1% in 2014 and 12.1% in 2015, maintaining a high yield (Table 3). At the same time, Shanghai Automotive Industry

Table 2. Changes in sales, operating profit and profit rate in various regions of Toyota

Unit: 100 million Japanese Yuan

Country/Year		2010	2011	2012	2013	2014	2015
Japan	Sales	112,203	109,862	111,673	128,210	142,974	144,038
	Operating profit	-2,252	-3,624	-2,070	5,763	15,101	15,714
	Profit margin	-2.01%	-3.30%	-1.85%	4.49%	10.56%	10.91%
North America	Sales	56,705	54,291	47,518	62,844	81,170	96,775
	Operating profit	854	3,395	1,864	2,219	3,260	5,845
	Profit margin	1.51%	6.25%	3.92%	3.53%	4.02%	6.04%
Europe	Sales	21,470	19,814	19,939	20,831	27,249	28,482
	Operating profit	-330	131	177	264	582	811
	Profit margin	-1.54%	0.66%	0.89%	1.27%	2.14%	2.85%
Asia	Sales	26,554	33,746	33,342	43,854	48,776	49,812
	Operating profit	2,036	3,130	2,567	3,760	3,957	4,217
	Profit margin	7.67%	9.28%	7.70%	8.57%	8.11%	8.46%
Others	Sales	16,738	18,091	17,601	20,942	23,366	24,492
	Operating profit	1,155	1,601	1,088	1,337	425	1,115
	Profit margin	6.90%	8.85%	6.18%	6.38%	1.82%	4.55%

Source: Annual report of Toyota.

Table 3. Sales, operating profit and profit margin of Guangzhou Automobile

Unit: 100 million RMB

	2011	2012	2013	2014	2015
Sales	109.84	127.13	181.24	215.53	282.85
Operating profit	4.24	7.03	18.67	23.97	34.33
Profit margin	3.9%	5.5%	10.3%	11.1%	12.1%

Note) The results of the automobile and its related work are shown.

1 RMB \approx 18.9 Japanese Yuan (As of December 2015)

Source: Based on the annual report of Guangzhou Automobile Company in each year.

Corporation (SAIC), which have established joint ventures with Volkswagen and General Motors, had subsequent profit margins of 12.8% in the automotive sector in 2013, 12.4% in 2014, and 11.4% in 2015⁷⁾. Considering this, the profit margin of Japanese manufacturers may not be inferior to that of major manufacturers in Europe and the United States.

To sum up the above information, although Toyota's China business is relatively low in sales, both

in terms of volume and RMB, compared with major European and U.S. manufacturers, as far as profitability is concerned, as pointed out by Seki (2013), it is possible to obtain high profit margins by centering on coastal areas. On the other hand, according to the following interviews with D and E, many dealers are operating at a loss, so there are problems in profit distribution between manufacturers and local dealers.

In the next chapter, based on these issues, we will

study the layout of the dealer shops of GAC Toyota (hereinafter referred to as the dealer stores) and the management system of maintenance parts that have a significant impact on the layout.

3. The Distribution of Dealers and the Management System of Maintenance Parts

1) The Distribution and Background of Dealers

In this section, the nationwide distribution of GAC Toyota stores will be analyzed based on the provincial population and new car registrations. As of the survey date in September 2015, the company has 437 stores nationwide⁸⁾. When comparing the number of stores

and population, we found that GAC Toyota's stores are mainly located in coastal areas, especially in the South China region (Guangdong Province, Fujian Province, etc.), where the head office and factory are located, while they are less distributed in inland areas (Figure 1). Specifically, according to the number of stores per 10 million people (up to the end of 2014) at the provincial level (jurisdiction/province/autonomous region), it can be seen that the stores are mainly located in coastal areas (Figure 1).

To leave aside the population, and to calculate the correlation coefficient with shops in various regions with indicators such as regional GDP (end of 2014), GDP per capita (end of 2014), and new car registrations (2014), it can be seen that the correlation coefficient between total GDP and the number of shops is the highest at 0.925. Then, the correlation coefficient between the number of new car registrations and the number of stores is 0.867. The correlation coefficient between the population and the number of stores is

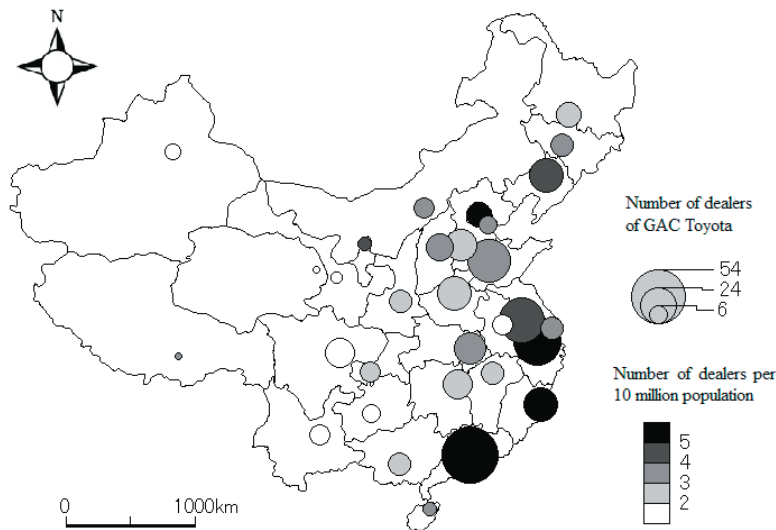


Figure 1. Number of dealers of GAC Toyota by region

Note: The positionings of the spots indicate the locations of the seats of government in each province and autonomous region.
Source: Data provided by the company's dealer and its website(<https://www.gac-toyota.com.cn/buy/shopping/dealer-search>)

0.778, and the correlation coefficient between GDP per capita and the number of stores per million population is 0.677⁹⁾ (Table 4).

In particular, there is a strong correlation between the total GDP (equivalent to population multiplied by population) and the number of stores. It can be inferred that the population size and GDP per capita in the region are both factors that can explain the allocation of stores. Therefore, there is no great regional difference in the number of stores when calculating the number

of stores of the GDP per trillion RMB (Figure 2).

In addition, in order to check the distribution of stores in the provincial regions, the concentration rate of stores in the provincial capitals of 20 provinces/autonomous regions located in inland regions¹⁰⁾ is calculated (provincial capitals account for the proportion of all shops in all provinces/autonomous regions). 69 shops out of 178 target stores are located in provincial capitals, with the concentration rate reaching 38.8%. However, since the GDP of these provincial capitals account for 29.1% of the total GDP of all provinces/

Table 4. Correlation coefficient between Guangyi Toyota's number of stores by region and indicators

	correlation coefficient
Population and number of stores	0.778
Total GDP and number of stores	0.925
GDP per capita and number of stores per 10 million population	0.677
Number of vehicles registered and number of stores	0.867

Source: Based on the same material as Figures 1 and 2.

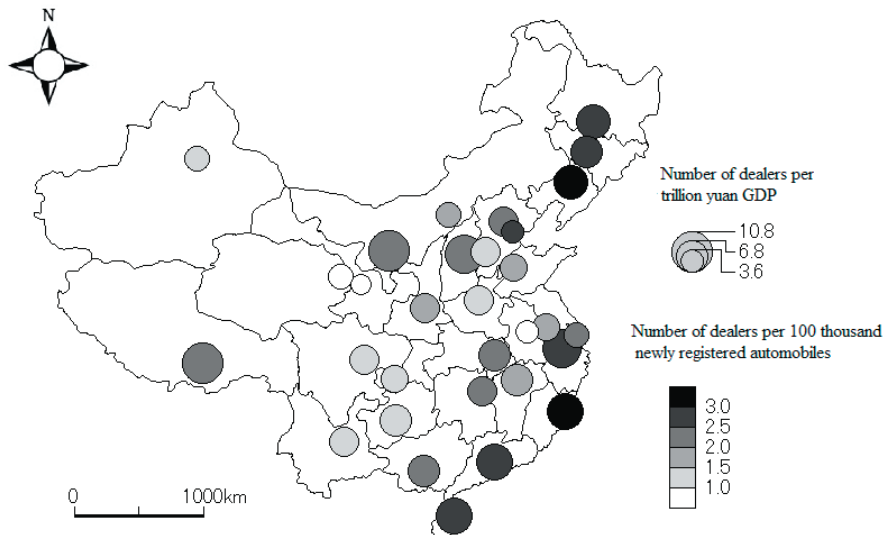


Figure 2. Number of dealers of GAC Toyota by GDP and number of automobiles registered

Note: The positionings of the spots indicate the locations of the seats of government in each province and autonomous region. Source: Data from Figure 1, the “China Statistical Yearbook” and the Chinese government website “National data” (data.stats.gov.cn)

autonomous regions, it can be said that there is a strong tendency to have a large number of stores in regions with high GDP.

On the other hand, considering the relationship with the number of stores registered for every 100,000 new cars, including other manufacturers, although there is a high correlation between the two, it can be seen from the mapping of the regional data that there is a certain tendency to concentrate in coastal areas (Figure 2). According to the number of stores per 100,000 cars in different regions, the regions with large numbers of stores are Liaoning Province (4.19 stores), Fujian Province (3.45 stores), Guangdong Province (2.95 stores) and Zhejiang Province (2.71 stores). It can be seen that the 4 provinces with the most stores are all located in coastal areas. In addition, the number of shops in 7 of the 10 coastal areas exceeded the national average (1.98 shops), while only 9 of the 21 inland areas exceeded the national average. Especially in the 12 regions in the west¹⁾, only 3 regions (2.30 in the Tibet Autonomous Region, 2.27 in the Ningxia Hui Autonomous Region, etc.) exceed the national average.

In addition to the above analysis, as described in the following section, Toyota itself has expanded its support for new dealers in suburban and rural areas in recent years. Considering all these factors, it can be inferred that the store development trend of GAC Toyota is highly related to the total GDP of various regions, but from the perspective of population proportion and other aspects, the number of stores in inland regions is relatively small.

To sum up, the reason why GAC Toyota has lagged behind in entering the inland Chinese market is related to their failure to actively develop and sell affordable cars according to the needs of the inland areas. In other words, the sales strategies of the company

mainly focused on the development in coastal areas where high-priced cars are expected to be affordable.

As described in the following chapter, in order to sell high-priced cars, the company attaches great importance to strengthening after-sales service. Therefore, according to the development of a region where there are dealers who have sufficient funds to provide after-sales service, it can be speculated that the correlation between the number of stores and total GDP increases. On the other hand, there may also be the following problems in adopting the strategy of prioritizing the sale of such high-priced vehicles. That is, (1) in the sale of high-priced automobiles, the inventory management cost of repair/maintenance parts will increase due to the improvement of after-sales service quality and customer satisfaction, and (2) therefore, the burden of ensuring inventory parts in order to improve customer satisfaction makes it difficult for dealers to obtain large profits.

So, the next section focuses on the background of Toyota's store development in the Chinese market by analyzing the company's inventory management and distribution system of maintenance parts.

2) Inventory Management and the Distribution System for Repair/Maintenance Parts

There are many parts that need to be replaced many times during the use of the car. In particular, in addition to the high replacement frequency of consumable parts, many parts are replaced due to faults or accidents. Besides, even if the production of the model is stopped, maintenance parts must be provided after the model is replaced. Therefore, the supply and management of repair and maintenance parts has become a long-term business of enterprises.

Toyota attaches great importance to obtaining high customer satisfaction through its after-sales service operation. In fact, Toyota does better than the industry average in terms of customer satisfaction, especially GAC Toyota, which occupied second place among all the investigated brands (Seki, 2013). In addition, when receiving after-sales service, it is said that the most important issue for customers is the length of time required for repair and maintenance¹²⁾. It can be inferred that in order to improve customer satisfaction, Toyota is focusing on the guarantee of parts at dealers and the reduction of delivery time.

In addition, after-sales service and sales of repair and maintenance parts are also important to dealers due to high profit margins. According to the interviews with store dealers, for the same dealer, the profit margins of the after-sales service can be higher than that of the car sales, with profit margins as high as 50%¹³⁾. In particular, it is said that when new cars are sold, car insurance will be added and updated, and

profit margins will be high when cars are modified according to customer preferences¹⁴⁾.

Therefore, at GAC Toyota, including those models of which the production and sales have stopped, the inventory of repair and maintenance parts can also be fully ensured to meet the needs of customers¹⁵⁾. More specifically, in addition to ensuring that the central logistics warehouse in Guangzhou stores all the spare parts needed for repair and maintenance, the frequently used spare parts are also placed in nine nationwide regional logistics warehouses (Figure 3). In such a way a distribution mechanism has been formed. That is, if there is an order from the distributor, the parts are basically distributed from the regional distribution warehouse, and if there is no inventory there, the parts are delivered from the central warehouse (Figure 4). Looking at the distribution of regional distribution warehouses, as of March 2016, there were a total of 9 sites spread around the country, namely, in Shanghai, Wuhan, Chengdu, Xi'

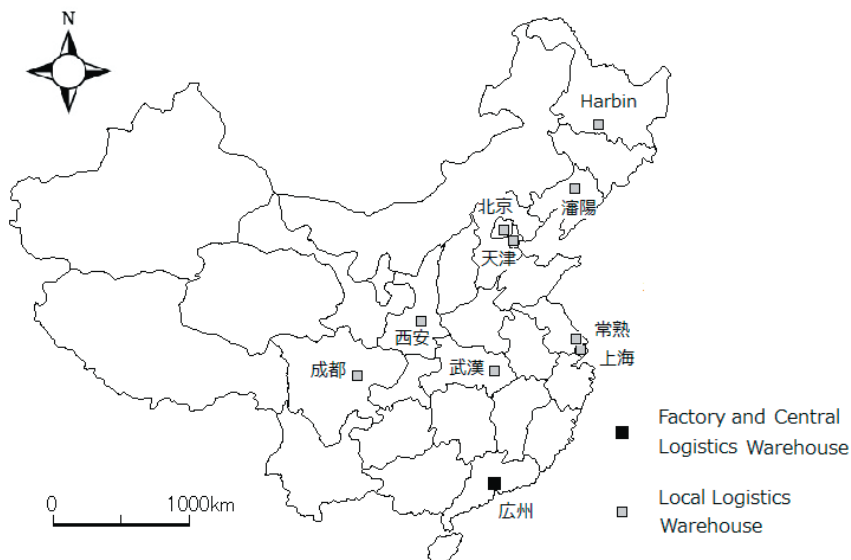


Figure 3. Distribution of repair and maintenance parts logistics warehouse(2015)

Source: Jin *et al.* (2014) and interview survey at GAC Toyota's dealer

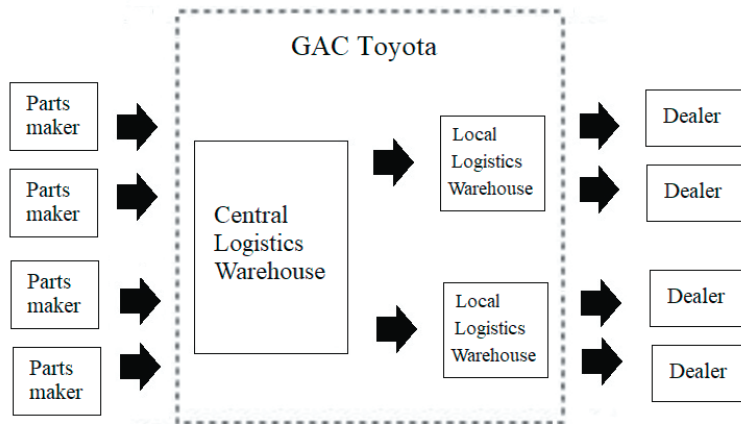


Figure 4. Flow Path of Parts for Repair and Maintenance

Source: The information provided by the company's dealers

an, Changshu (county-level city in Jiangsu province), Beijing, Tianjin, Shenyang and Harbin (Figure 3).

When interviewing and investigating dealers in Shanghai, it was found that the distribution warehouses in Changshu area, located in Suzhou, Jiangsu province, and the logistics warehouses in Shanghai (warehouses set up in tax preferential areas in order to reduce the tariffs on imported spare parts have more inventory than those in other areas, and the distribution scope covers the whole country) were used to allocate spare parts. If the distributor is also located in Shanghai, most parts will arrive within 24 hours after the order is placed, unless there are traffic jams or other problems¹⁶⁾. In addition, even if there are logistics warehouses set up in the inland areas of Wuhan, Chengdu, Xi'an and Harbin, according to surveys by Jin (2014) and others on the time required to deliver goods from Wuhan's logistics warehouses to various regions, goods in all the surveyed regions will arrive within 2 days of the order being made. In this way, the company has established a distribution system that can quickly provide repair and maintenance parts for places including inland areas.

On the other hand, regarding the reasons why the company's sales volume and number of stores in China have stagnated, the following points can be considered. That is, although the company requires¹⁷⁾ dealer stores to purchase and store parts that need frequent replacement and maintenance, there are only a limited number of dealers with certain economic strength that can meet the in-store management policy of the company. The following section will discuss how many parts GAC Toyota requires dealers to store in stock.

First of all, the company uses about 213,000 parts, which is far more than for ordinary industrial products. The reason for the large number of parts mentioned above is that many special parts are specially designed and developed for the luxury version of each model. In addition, of these components, only about 53,000 are produced in China, while about 160,000 are imported from overseas, including Japan (survey as of March 2015). Therefore, the company pays close attention to the ordering and storage of spare parts¹⁸⁾.

However, judging from the quantity of parts ordered by dealers for repair and maintenance, the

Table 5. Ownership status of parts for repair and maintenance at GAC Toyota

	Number of parts (%)	Percentage of sales	Necessity of purchase at the dealer and inventory
Type A	1,500 parts(10)	65%	Parts that the dealer should possess sufficient inventory
Type B	3,750 parts(25%)	25%	Parts that are recommended to be held as inventory by the dealer
Type C	9,750 parts(65%)	10%	Manufacturers owned in their own warehouse. No need for the dealer to possess

Source: Based on the contents of internal materials viewed at the company's dealer.

15,000 types of parts most frequently ordered account for about 90% of the total order. In addition, about 75,000 types of parts account for about 7% of the total order quantity, leaving about 123,000 types of parts, which account for only about 3% of the total order quantity (based on internal documents viewed at the dealers of the company).

According to the frequency of orders, the 15,000 types of parts that account for 90% of the orders are classified A, B or C for in-stock management (Table 5), which the authors will explain in terms of type, quantity and management policy, as follows.

Although Class A parts only account for about 10% of the 15,000 types of parts, they account for about 65% of the manufacturer's sales and are often ordered by dealers. Sufficient inventory of these parts must be maintained. For example, air filters, fuel filters in the supply devices of the engine systems, and oil filters in the refueling devices. Next, the proportion of Class B parts (about 25% of the 15,000 parts, i.e. 3,750) accounts for about 25% of sales. The dealers are required to keep the largest inventory possible for these parts too. Specifically, these parts include air flow meters, pipelines, fuel pumps and silencers in the supply devices, and oil pumps and oil pans for the refueling devices. On the other hand, there are about 9,750 kinds of C-type parts (constituting about 65% of the 15,00 parts), and although they are many, they only contribute to about 10% of the sales volume.

Therefore, the distributor is not required to maintain inventory, but these parts are stored in the manufacturer's own warehouse (based on the internal documents of the dealers viewed).

In China, due to differences in weather and road conditions, production locations and other reasons, compared with the situation in Japan, it seems that there are more types of parts ordered for repair and maintenance. Therefore, the number of parts that need to be stored by dealers often increases correspondingly, and the burden on dealers will also increase¹⁹.

Even for spare parts such as Classes A and B, which should be stocked in the dealer's shop, if the stock is insufficient and an urgent order is made from the manufacturer, they will enter the distribution mechanism. However, according to the stipulations of the signed contract, if the number of urgent orders exceeds a pre-agreed quota, the dealer has to pay the freight costs²⁰.

Therefore, the company requires dealers to purchase various parts and store them in the shops, but there is a limited number of local capital dealers that are qualified to do so. At the same time, in order to improve customer satisfaction, the company frown upon unnecessary replacements of parts. Rather, they encourage dealers to justify in detail to customers why expired parts should be exchanged²¹. Besides, data from other Toyota joint venture FAW Toyota

dealers also emphasize “improving customer satisfaction rather than expanding sales volume”, and when dealing with dealers, they also require investment in dealers who “not only focus on immediate interests but also evaluate the company’s brand from a long-term perspective”²²⁾.

However, due to such high requirements on the service level and morality of dealers, it has led to “many dealers operating in deficit, and only about 10% of them can make sufficient profits”²³⁾. In addition, according to E (interviewed in May 2018), “Toyota has a high degree of customer satisfaction due to its low failure rate, but dealers have little chance of making profits from after-sales service.” As a result, the company is committed to improving after-sales services, including repair and maintenance parts management. Although it has higher customer satisfaction compared with its competitors, it cannot be regarded as having achieved higher competitiveness than automobile manufacturers through this strategy at present. Therefore, considering that it is difficult to ensure that many dealers with sufficient funds can accept the policy of manufacturers that attach importance to customer satisfaction²⁴⁾, this may be the reason why the company’s sales network has not expanded.

According to the information obtained from a supplementary survey of FAW Toyota dealers, in order to recruit new dealers, from 2016, the company will increase the original reward from a maximum of 2 million to 4 million RMB when opening new stores. Especially in the suburbs and inland areas of major cities where the number of existing stores is small, the bonus paid can be up to 4.5 million RMB. At the same time, it also encourages the opening of small shops in these areas with an investment of 3 million to 5 million, and is reorganizing and forming a sys-

tem that allows dealers to develop suburban and rural areas with less burden²⁵⁾.

However, in fact, as mentioned earlier, it is hard for dealers to obtain short-term profits due to the burden of the spare parts inventory and other after-sales services. Moreover, they also take political risks such as with the deterioration of Sino-Japanese relations. As a result, in recent years, there have been few new dealers and many newly established stores have been set up by some of the dealers who were already running the stores²⁶⁾. So, it can be inferred that the increase in the number of shops and sales volume of Toyota have stagnated. Even if the manufacturer is in a profit-making state, it is difficult for dealers to make profits. And there seems to be a problem in the profit distribution between the manufacturer and the dealers.

4. Conclusion

By taking GAC Toyota as the example, this paper focuses on the sales strategies of Japanese automobile manufacturers in China, and the regional deployment of dealers and the management system of maintenance parts.

Although the company has 437 dealers across the country, in relation to population ratios and other measurements, the distribution of stores is biased towards coastal areas. In recent years, the development in the inland areas with increased demand for automobiles has been slow. On the other hand, there is a high correlation between the GDP by region and the number of stores. The company does not focus on selling affordable cars to consumers in inland areas where the economies of scale are relatively small, but focuses on selling expensive cars in large coastal cities

with large economies of scale.

In addition, the growth in the number of stores of the company has been hampered, and the number of dealers who can fully implement the after-sales service that the company attaches great importance to is limited. In order to distribute many spare parts stored for repair and maintenance to dealers all over China, the company has set up logistics warehouses in nine regions of China. Four of these logistics warehouses are located in inland areas and have established a logistics system that can quickly distribute spare parts to inland dealers.

On the other hand, the company requires dealers to permanently have at least 1,500 types of spare parts needed for maintenance in stock, which requires dealers to have healthy finances. In addition, Toyota requires dealers to think of the long rather than short-term benefits, and to improve customer satisfaction through adequate explanation. Therefore, many dealers of the company will be under economic duress, requiring them to have the financial strength to overcome management difficulties, at least in the short-term. However, it can be pointed out that the number of financially sound dealers is limited, and the profit distribution between manufacturers and dealers is also difficult.

As discussed by Kawabata (2006; 2010) and Gao and Abe (2017), the dealers experience problems such as with monitoring costs and profit distribution between manufacturers and dealers. It can also be pointed out that in order to expand its store network, Toyota may need to strengthen manufacturer support for dealers and reevaluate the profit distribution between the manufacturer and dealers. Furthermore, as Endo (2010) pointed out in a study on Japanese convenience store chains entering Thailand, countermeasures such as the direct management of dealers

may be considered in the future.

In addition, the following points might be worthy of further research in the future. The strategies of Toyota to carry out business in China may be completely different from other overseas automobile manufacturers. It is necessary to make clear the expansion strategy and development status of other automobile manufacturers in the Chinese market. For example, it is necessary to make a comparative study of the cases of other foreign automobile manufacturers involved in business development in inland China. Take Nissan, another Japanese manufacturer, as an example, this company has actively entered inland China to develop its business through the introduction of low-priced cars and plans to expand its market share in China. There are differences in sales strategies in the Chinese market even between the Japanese companies.

On the other hand, Toyota has high market shares in other emerging countries such as in Southeast Asia. It can be inferred that there are factors such as the political situation that may have led to its slow development in China. In the future, it is expected that automobiles themselves will become modular products, and the number of parts themselves will also decline with the popularization of electric automobiles. Therefore, we also need to consider the sales structure based on this situation. Further research on these issues it is suggested will be carried out in the future.

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Notes

- 1) References for the research on the globalization of multinational companies are from the research conducted by Izawa (1996), Mogaki (2001), Suzuki and others (2005).
- 2) In China, car dealers selling vehicles of specific manufacturers are called “4S stores”. 4S stands for the four functions of new car sales, parts sales, after-sales service and information feedback, which are generally operated by enterprises other than automobile manufacturers (Yahagi 2009, PP. 295 - 318). The word “dealer”, which is common in Japan, is used in this paper.
- 3) For example, in terms of mass communication, Nikkei (July 16, 2014) covered reports as “Nissan, 650,000 yen auto in China” (https://www.nikkei.com/article/DGXNAS-DZ1608V_W4A710C1TJ1000/).
- 4) Japan’s domestic profit margin fluctuates greatly, which may be due to the fluctuation of export profit margin caused by currency fluctuation.
- 5) The profit margin is calculated by the calculation of the sales and profits of each company from the total sales and profits of the surveyed enterprises listed in the “Basic Survey of Overseas Business Activities”.
- 6) According to the annual report of SAIC Motor.
- 7) GAC is more focused on joint ventures with foreign enterprises than developing its own products. Specifically, in addition to Toyota, it has also established joint ventures with foreign enterprises such as Honda, Mitsubishi, Hino and Fiat, from which it has made the major part of its profit. Its most important joint ventures are with Toyota and Honda respectively, so it is believed that the company’s performance can reflect the business performance of Japanese companies in the Chinese market. According to the annual report of SAIC Motor.
- 8) The data and information are provided by GAC Toyota dealers, but they are almost consistent with the dealer related information published by GAC Toyota on its website (<https://www.gac-toyota.com.cn/buy/shopping/dealer-search>, August 13, 2017).
- 9) Although the index leans to regions with high GDP per capital, the value will be lower than the correlation coefficient between the total GDP and the number of stores due to the relatively large deviation between these regions.
- 10) In this report, coastal area covers three direct-controlled municipalities including Beijing, Shanghai and Tianjin, and seven provinces including Liaoning, Hebei, Shandong, Jiangsu, Zhejiang, Fujian and Guangdong, while the other 21 provinces, autonomous regions and municipalities are defined as inland areas.
- 11) The standard western regions are as follows: Inner Mongolia Autonomous Region, Ningxia Hui Autonomous Region, Gansu Province, Xinjiang Uygur Autonomous Region, Shaanxi Province, Sichuan Province, Chongqing, Qinghai Province, Guizhou Province, Yunnan Province, Tibet Autonomous Region, Guangxi Zhuang Autonomous Region (<https://www.jetro.go.jp/world/asia/cn/seibu.html>(December 15, 2018).
- 12) According to the interview with several customers of the company’s dealers and C in March 2015.
- 13) According to an interview with B in September 2015.
- 14) According to an interview with E in May 2018.
- 15) According to an interview with B in September 2015.
- 16) According to an interviews with A in March 2015.
- 17) According to an interviews with A in March 2015.
- 18) According to an interviews with A in March 2015.
- 19) The above points are based on interviews with employees of two local subsidiaries in China, one Toyota dealer in Japan and two other car manufacturers, i.e. Peugeot and Matsuda. In addition, GAC Toyota Company adjusts the quantity of spare parts for dealers according to the necessary degree of the following special parts. 1. New vehicle parts, 2. Seasonal parts, 3. Parts requiring large storage space, 4. Parts of luxury vehicles, 5. High-priced parts, 6. Parts required during promotion, 7. Parts under warranty, 8. Parts of the model that have finished production (based on internal documents viewed at the dealers of the company). Specifically, among the parts to which 3.5.8 belongs, there are also cases where the number of parts that the dealer should retain is reduced. For example, dealers keep as little inventory as possible of the parts of the models that have stopped production. When parts are needed, dealers order parts from GAC Toyota (according to an interview with A in March 2015). On the contrary, high and express demand parts like 1.4.6.7 must be stocked in the dealer’s store.
- 20) According to the interview with B in March 2015.
- 21) According to an interview with B in March 2015. Toyota Motor’s other joint venture, FAW Toyota Motor Sales Co. Ltd., also emphasize, in the 2016 Dealer Recruitment Seminar documents, that “we value the improvement of customer satisfaction rather than the expanding of sales” and hope to invest dealers who “not only focus on immediate interests but also evaluate the company’s brand from a long-term perspective”
- 22) According to the company’s 2016 Dealer Recruitment Seminar data.

- 23) According to the interview with D (in September 2016) and E (in September 2017). According to E (interviewed again in May 2018), “Toyota has a high degree of customer satisfaction due to its low failure rate, but dealers have little chance of making profits from after-sales service.”
- 24) According to the interview with E (in September 2017) and the information posted by the following car users on the review website, in fact, even though the company’s existing dealers and competitors’ dealers have the behavior of encouraging customers to replace unnecessary or expensive parts in order to ensure profits, dealers are also facing challenges in ensuring profits while improving customer satisfaction ① <https://www.autohome.com.cn/beijing/> ② <https://baijiahao.baidu.com/s?Id=15724437638792&wfr=spider&for=pc> ③ http://www.sohu.com/a/116644922_397438, retrieved on February 22, 2018).
- 25) According to the data of the company’s 2016 Dealer Recruitment Seminar.
- 26) According to an interview with E in May 2018.

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