Journal of Business and Economics, ISSN 2155-7950, USA
October 2019, Volume 10, No. 10, pp. 1003-1008
DOI: 10.15341/jbe(2155-7950)/10.10.2019/008

http://www.academicstar.us

Auto Markets in the World and Strategy of Japan's Companies

Hiroyuki Matsuoka
(Department of Management and Information Sciences, Fukui University of Technology, Japan)

Abstract: In the world auto market, top three companies are VW(Volkswagen), Runault-Nissan-Mistubishi, and Toyota. About some selected countries and areas, China, England, Italy, Australia, Germany, Turkey, Russia, Sweden, USA, Brazil, UAE, Japan, Vietnam and Thailand are more competitive. However, the situation is different. Seeing monopolistic market countries and areas, Saudi Arabia, Taiwan, Korea, Malaysia, France, India, and Pakistan, in particular, the influence of Japan to Taiwan, India, and Pakistan is very big. But in Korea and France, their own companies' brands occupy the market. In Japan domestic market, the overall situation is competitive. Almost all vehicles made in Japan are Japanese brand. From now on, we have to note the development of electric vehicle (EV) and other new technologies such as automatic driving and connected car. That is because they will give a great impact on the auto industry and market of Japan. Now Japan's auto industry is going to be consolidated into three groups, Honda, Toyota group, and Renault-Nissan-Mitsubishi group for seeking the scale merit of economy. Therefore, I will pay attention to the worldwide development of EV and other new technologies and the reorganization of auto companies groups.

Key words: vehicle industry; market share; herfindahl-hirschman index; electric vehicle (EV); reorganization of industry

JEL codes: A

1. Introduction

Though global auto sales trend is very important, regional sales situation is also crucial. That is because each country and area sales have fairly characteristics. Therefor first of all we would like to see the reginal trend in some countries and areas. In particular, using HHI and each maker sales share, we see the market situation of each counties and areas. Secondly we see the global sales situation. Moreover now we face the new situation for auto industry. The development of electric vehicle (EV) is going to change the present vehicle industries of each countries. It is partly reflected by worldwide environment regulations. Many countries declare they will prohibit new gasoline vehicle productions and new gasoline vehicle sales in the near future or around 2040. It will give a great impact on the present vehicle industries of each countries including Japan as a major vehicle production country. Therefore now it is very important for us to understand the present situation of Japan and other countries' auto industries including auto companies and auto companies group.

Hiroyuki Matsuoka, Doctor, Department of Management and Information Sciences, Fukui University of Technology; research area/interest: economics. E-mail: matsuh@fukui-ut.ac.jp.

2. Herfindahl-Hirschman Index (HHI)

Herfindahl-Hirschman Index (HHI) is used to discuss market competition situation of each industry. Japan government uses this index when reviewing M＆A to protect the appearance of a Gulliver in a market. The Giant company could control the price and other factors and it eliminates free competition in the market. Of course, the situation is not simple like that. In any way, this article analyzes other countries and areas markets with HHI. The index is calculated to square each company's share as sales in a market and sum them. For instance, if there are three companies in a market and each share is 60%, 30% and 10%, the index is as flows (Yukiya Uemura, 2009):

$$HHI = 60^2+30^2+10^2 = 4{,}600$$

It is generalized as follows:

$$HHI = \sum_1^n Si^2 \quad i = 1+\cdots n$$

Regarding this equation, n is the number of companies in a market and Si is the market share of company i.

In this case, if the minor share is unavailable, for example: share of company A is 50%, company B is 20%, C is 5% and "other" is 25%,

We can calculate HHI as follows（see References[3]）:

$$HHI = 50^2+20^2+5^2+5^2+5^2+5^2+5^2=3{,}050$$

That is to say, we can consider that the smallest share company is 5% and each company of "other" does not exceed the share of the smallest company 5%. Furthermore, HHI indicates the number of company competes in a market. For example, If there are two companies in a market and the share is 50% and 50% , the decimal point representation is as follows:

$$0.5^2+0.5^2 = 0.5$$

The reciprocal of 0.5 is 2, that is to say, 2 companies. It is considered to be two companies compete in the market. In the case above, each share is 60%, 30%, and 10% in the market, it is considered that on the average 2.2 companies (2.173) compete. This market intensity is slightly more competitive than the case, the share is 50% and 50%. In this article, in reference to the Fair Trade Commission of Japan, we adopt the following market intensity criterion.

HHI ≦ 1,500: there is not the fear of competition restrictions in a market. (competitive）

1,500 ＜ HHI ≦2,500: the fear of competition restrictions is small in a market.

(not necessarily monopolistic)

A company's share >35% or HHI >2,500

the fear of competition restrictions is big in a market. (monopolistic）

3. Each Country and Area

Table 1 indicates market competition situation by each country and area. These are divided into three groups. HHI is smaller than or equal to 1,500 countries. HHI is greater than 1,500 countries. And the share of one company in the market is greater than 35% or HHI is greater than 2,500 countries. First of all, about HHI <= 1,500 countries, we can see China, England, Italy, Australia, Germany, Turkey, Russia, Sweden, USA, Brazil, UAE, Japan, Vietnam and Thailand. These markets are competitive. HHI varies from 402 to 1494. Vietnam and Thailand HHI: 1,428 and 1,492 are nearly equal to 1,500. The variation is big. Besides that, in China, England, Australia, Turkey, Brazil,

UAE, Vietnam, Thailand, the top share is occupied by foreign brands. For example, in England, Ford, VW etc. and in Brazil, GM, FCA, VW, and so on. On the other hand, in Italy, Germany, Russia.

Table 1 HHI (Some Selected Countries and Areas) 2017, 2018[1]

country or area	HHI	country or area	HHI
HHI <= 1,500	Vietnam	1,428	
China	402	Thailand	1,494
England	544	HHI > 1,500	
Italy	690	Indonesia	1,677
Australia	728	Share > 35% or HHI > 2500	
Germany	793	Saudi Arabia	2,539
Turkey	798	Taiwan	2,550
Russia	897	Korea	2,562
Sweden	918	Malaysia	2,834
U.S.A.	1,096	France	2,894
Brazil	1,107	India	3,250
UAE	1,334	Pakistan	4,281
Japan	1,395		

Table 2 Big Three Auto Markets[2]

country, maker	sales	share (%)
<USA>		
GM	715,264	17.4
Ford	596,794	14.5
Toyota	572,036	13.9
FCA	514,769	12.5
Nissan	416,003	10.1
<China>		
Volkswagen (VW)	1,447,082	10.8
Honda	650,730	4.9
Toyota	572,433	4.3
Buick	552,222	4.1
Changan	532,593	4.0
<India>		
Maruti-Suzuki	163,200	50.7
Tata	54,295	16.9
Hyundai	45,008	14.0
Mahindra	37,478	11.6
Toyota	13,113	4.1

USA: Jan-Mar 2018, China: Jan-May 2018, India: May 2018

[1] http://car-moby.jp/48416#c4, https://www. marklines.com/ja/, https://zuuonline.com/archives/164998.
[2] https://www. marklines.com/ja/, https://zuuonline.com/archives/164998.

Sweden, USA, Japan, the domestic brands have top share. In Italy, Fiat and in Germany, VW, Mercedes-benz, Audi. In Sweden, Volvo. About some countries, such as Australia, UAE, Japan, Vietnam and Thailand, the top share companies are Japanese ones. Indonesia is also the same. Concerning monopolistic markets, in India, Maruti-Suzuki has big share, more than 50% . Japan's influence is very big and also in Taiwan and Pakistan. On the other hand, in France and Korea, their national brands have big share in the markets. When we pay attention to a world trend, Table 3 indicates that in 2017 Top three companies are VW (Volkswagen), Runault-Nissan-Mistubishi, Toyota concerning the share of global auto sales. Regardless of an unlawful gas exhaust problem in 2015, VW sales more cars in the world. The driving force role of that is sales in China. In some countries, vehicle sales high rank countries, SUV（Sport Utility Vehicle）is very popular and the share competition is high. When seeing the share of auto sales in Japan,

Table 3　Vehicle Sales in the World (Top 5), 2017[3]

10 thousand

maker	sales
Volkswagen (VW)	1,074.2
Renault-Nissan-Mitsubishi	1,060.8
Toyota	1,038.6
GM	960.0
Hyundai-Kia	725.1

In the case of vehicles excluding cars less than 660cc, the market is monopolistic (HHI = 2,722, Table 3). It excludes import cars. The top share is Toyota, 47.3%. About the market of cars less than 660 cc (they are called Key-Jidousha, which means light car), HHI = 2,445 and it is not competitive. The top share is Daihatsu, 32.7%. In the case of motor truck, the market is monopolistic. The top share is Toyota, 38% and HHI = 2,280. The market of buss is also monopolistic. The top share is Toyota, 36.6% and HHI is 2,588. We realize that the Japan vehicle market excluding imported cars is monopolistic as a whole. However, including imported cars, the market is more competitive. Toyota has top share, 28.4% and HHI is 1,395.

Table 4　Vehicle Sales in Japan (Top 5)[4]

excluding imported cars, Jan-June, 2017

maker	sales	share (%)
Toyota	1,391,759	47.3
Honda	381,835	13.0
Nissan	345,407	11.7
Mazda	155,616	5.3
Subaru	144,143	4.9

HHI = 2,722

[3] https://www. marklines.com/ja/.
[4] https://www. marklines.com/ja/.

Table 5 Vehicle Sales in Japan (Top 5)[5]

including imported cars, Jan-June, 2017

maker	sales	share (%)
Toyota	1,587,062	28.4
Nissan	751,559	13.5
Suzuki	665,871	11.9
Daihatsu	630,856	11.3
Honda	564,275	10.1

HHI = 1,395

4. Strategy of Japan's Auto Companies

A vehicle has 30,000 parts. Many parts manufacturers support some finished auto manufacturers in Japan. The industry produces much employment. In many countries, the industry occupies the major part of manufacturing industries. Now Japan has advantages in auto manufacture field. Japan has 25,000 auto related companies and employees are 5 million and over. However, to realize connected car, electric car, and automatic driving, the vehicle industry's research and developing costs are increasing. In the future, we will see the new environmental regulation and strengthening environmental regulation. It will give a great impact on the auto industry and the markets. In particular, electric vehicle which is the threat of substitute products as one of Porter's Five Forces (Michael Porter, 1980) for existing gasoline engine vehicles. Therefore, we can see reorganization in the industry such as Toyota-Mazda (2017) capital and technical tie-up, Toyota-Suzuki (2018, under discussion), Honda-GM. That is because scale merit of economy is crucial for auto companies to survive from now on. Toyota-Mazda tie-up is seeking for the development of EV, Toyota-Suzuki alliance's aim is the development of India and Africa markets. Honda-GM cooperation is for fuel cell vehicle. Now Japan's vehicle companies are going to be consolidated into three groups, Toyota group, Renault-Nissan-Mitsubishi group, and Honda (Industrial Map 2018). Off course, the point is not only auto companies but also tie-up with research institutes, AI (artificial intelligence) ventures and ICT companies outside existing auto companies such as Google and Apple. It is the comprehensive tie-up related to EV, automatic driving, and connected car. Existing auto companies have rich data about automobiles themselves and ICT companies have high technology.

5. Conclusions

When seeing some selected countries and areas, China, England, Italy, and so on are more competitive. However, the situations are different. On the other hand, in monopolistic countries and areas, like Taiwan, India, and Pakistan, Japan's influence is very big. But in Korea and France, the markets are largely occupied by their own companies' brand. The vehicle industry's market intensity of Japan depends on the type of automobiles made. The overall market situation is competitive. From now on, we have to note the development of electric vehicle (EV) and other new technologies such as automatic driving and connected cars. That is because they will give a great impact on the auto industry and market of Japan. Now Japan's auto industry is going to be divided into three groups, Honda, Toyota group, and Renault-Nissan-Mitsubishi group for seeking scale merit of economy. Therefore, I will pay attention to the worldwide development of EV and other new technologies and the reorganization of auto companies groups.

[5] http://car-moby.jp/48416#c4.

References

Michael Porter (1980). *Competitive Strategy: Techniques For Analyzing Industries and Competitors*, Free Press.

Nikkey Inc., Industrial Map 2018, Nikkey Inc., 2017.

"Ranking of vehicle sales of Japanese companies", available online at: http://car-moby.jp/48416#c4.

"Vehicle Industry Portal MARKLINES", available online at: https://www. marklines.com/ja/.

Yukiya Uemura (2009). "Herfindahl-Hirschman Index, HHI", available online at: http://kyu-go-go.cocolog-nifty.com/blog/2009/10/post-bad0.html.

Yukiya Uemura (2013). "HHI calculation when miner share is unavailable", available online at: http://kyu-go-go.cocolog-nifty.com/blog/2013/01/post-860a.html

ZUU online, available online at: https://zuuonline.com/archives/164998.