Statistical Understanding of the Sharing Economy

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Defining the Sharing Economy

This article looks at how the sharing economy, which represents the digital economy, can be captured statistically. The article will first explain what the sharing economy is, then provide analysis of free Internet services such as Facebook and Google.

The sharing economy points to businesses that share unutilized assets. It is basically a transaction between private individuals, and is characterized by matching of service providers and users through the Internet. Before the arrival of the Internet, transactions between individuals were difficult, but with PCs and smartphones now being widespread, matching can be easily done on the Internet. Businesses that do the matching are called platform enterprises. Platform enterprises make profits by taking commission from both the service providers and service users.

Unutilized assets utilized in the sharing economy are diverse. The Sharing Economy Association Japan uses five classifications: space, goods, skills, time, and money.

Private lodging is a typical example of sharing space. It is a service that rents out empty rooms at private houses to guests. Airbnb is a famous platform enterprise. There are also businesses that share vacant parking spaces, such as Akippa and Nokisaki. Mercari is well-known for sharing goods. This is selling unwanted goods in the household to other people. It is actually more like buying and selling, rather than sharing. Other services include Laxus, which shares luxury handbags, and Aircloset, which shares dresses upon payment of a fixed fee. For skills and time, there is Tasukaji, which shares housekeeping services by providing cleaning and cooking services to families. There is also AsMama, which facilitates carpools for children and child care, and Crowdworks, which facilitates work like website creation. Money sharing takes the form of crowdfunding. Crowdfunding can be classified into three categories: the donation type collects money to implement a project; the purchasing type collects money to develop a new product and then purchases that product once it is complete (a well-known company is Makuake); and the investment type is individuals lending money to an individual.

What is new about the sharing economy is that private individuals are conducting production activities. There are such business forms as private individual enterprises, and private stores are also activities conducted by individuals, but there are an increasing number of cases where employed business persons conduct side-businesses on an even smaller scale. Each amount is small, but if the number continues to increase, it may become too large to ignore *(Chart 1)*.

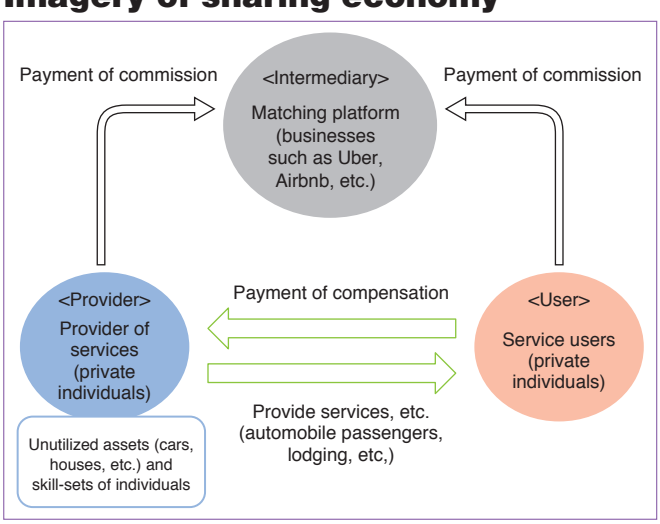
The Size of the Sharing Economy

Development of the sharing economy in Japan lags far behind other developed nations, but nevertheless it continues to expand. In July 2018, the Cabinet Office released estimations for the market size of the sharing economy to be a total of 470 to 525 billion yen for 2016. As a market size, it is the same as the size of the carbonated beverages market or the canned coffee market in 2011.

The market size for “space”, which includes private lodging and business space rentals, is estimated to be 70 to 100 billion yen, and the market size for “goods”, which includes sales of second-hand goods, is estimated to be around 15 billion yen. The market size for “skills and time”, such as housekeeping services, is estimated to be 10 to 20 billion yen, and “money”, which includes donations and investments, is estimated to be around 15 to 20 billion yen. Globally, automobile-related services such as Uber are expanding, but due to the regulation on unlicensed taxis in Japan, the market size is zero.

The total value of the sharing economy includes items that are not

CHART 1
Imagery of sharing economy



Source: Mitsubishi Research Institute, Inc., Report on “Research and Analysis on Reconstructing Service Statistics” (Fiscal 2016 contracted research from Office of Statistics Commission), March 2017

accrued in GDP. This is because purchasing and selling of second-hand goods between private individuals is merely a change in the ownership of goods, not production of a new good, and therefore does not contribute as a factor to boost GDP. The market size that corresponds to this is 270 to 275 billion yen. On the other hand, if agricultural produce or handmade accessories are sold online, then that is production. This portion is estimated to be around 15 billion yen.

Of sharing money, when a private individual lends money to another individual, it is a monetary transaction, not production, on the System of National Accounts (SNA). This is estimated to be 55 to 60 billion yen.

If sales and profits of platform enterprises are captured in the Financial Statements Statistics of Corporations, the market size is 100 to 120 billion yen, and this portion is reflected in GDP.

When these are all considered, the portion that is not reflected in the current GDP statistics is 95 to 135 billion yen on a production value basis, and roughly 0.022% of GDP. What is reflected in GDP is the value-added after deducting the intermediate input which makes up around 0.01% of GDP. The market size in Japan is rather small, but it is thought to continue to expand, and there may even be possibilities of new services emerging *(Table 1)*.

Current Status of Private Lodging

Private lodging has the largest market size out of the sharing economy. But it has thus far been difficult to grasp the real situation. According to research findings published by the Ministry of Health, Labor and Welfare in March 2019, while 16.5% of private lodgings have been authorized under the Inns and Hotels Act, 30.6% were unauthorized, and 52.9% were unidentified. The reasons for the difficulty in capturing the real situation include the size of the business being small, the fact that the law had not been in place until 2018, and the existence of overseas business owners.

The law regarding private lodging was enforced with the enactment of the Residence Hotel Business Law (New Minpaku Law) on June 15, 2018. Upon notification, private lodgings can become operational, but the number of days of operation has now been limited to 180 days. Depending on the region, operations on weekdays are not authorized, and some regions have even tighter conditions. The number of private lodgings as of July 6 was 5,397 and this is not even one 10th of the roughly 60,000 listings that were on Airbnb until this spring.

Since the regulations have become more strict, the pure form of private lodging where vacant homes of individuals are rented out will decline. But with the Olympics coming up, demand for accommodation will increase. There may be a possibility for businesses to operate something similar to private lodging. In fact, businesses that rent out private residences as "vacation rentals" for accommodation have been emerging. There have also been movements by private individual enterprises to create a new business model by partnering with vendors that undertakes all work, including various procedures and cleaning.

TABLE 1

Size of sharing economy (100 million yen)

	Not included in GDP	Included in GDP, but not captured	Included in GDP, and captured	Sum
Space		700-1,000	700-800	1,400-1,800
Goods	2,700-2,750	150	100-150	3,000
Skill and time		100-200	50	150-250
Money	(550-600)		150-200	150-200
Sum	2,700-2,750	950-1,350	1,000-1,200	4,700-5,250

Source: Cabinet Office, Overview of Report on "Research and Analysis on Measuring Economic Activities of New Areas such as Sharing Economy"

Situation of Ride-Sharing

Ride-sharing services of privately-owned cars, such as Uber, have been expanding their market share globally. In Southeast Asia, services such as Grab are commonly used. But Japan has a regulation on unlicensed taxis, and it is highly unlikely that the market will expand. Regulation on unlicensed taxis is a regulation that says you cannot carry people in cars for profit if the cars are not taxis. It is aimed at preventing non-taxi businesses from charging outrageous prices, and also at maintaining the quality of the automobile transport services. This regulation itself has been accepted by the Japanese people and the likelihood of deregulation is slim.

But services similar to this will likely expand from here on. Drivers cannot be shared, but the sharing of cars itself will move forward — like Times Car, a car-sharing service where businesses own cars and the customers sharing those cars have already been in place. In addition, there is a service called Anyca, which rents out privately-owned imported cars.

What Types of Statistics Are Required to Grasp Reality

Estimations by the Cabinet Office are based on research conducted by institutions such as Yano Research Institute. In order to accurately understand reality, there is a need to develop statistics.

Sales of services (trading volume) such as private lodgings and ride-shares need to capture sales of individuals that provide these services, but grasping that is difficult. Even the current Financial Statements Statistics of Corporations is struggling to capture private enterprises, and it is difficult to capture the sales being conducted by private individuals. One candidate to capture individual income would be taxation data, but for those individuals whose annual income (sales subtracted by expenses) is less than 200,000 yen, there is no need to file taxes, and hence it also gives rise to a leak in capturing information for taxes as well.

A method to capture sales of individuals can be considered by focusing on the commission revenue of platform enterprises. If, for example, 10% of services provided by the individual are assumed to be paid to the platform enterprise in commission, by capturing the commission revenue of the platform enterprise, sales of individuals can be calculated.

To capture platform enterprises through statistics, there is a need to properly acknowledge platform enterprises as an industry. As an industry type, it can be accrued under "Administrator of portal sites and servers of the Internet-associated service industry". Platform enterprises can begin to operate with just a computer, and thus they are harder to capture compared to regular enterprises. Various methods such as web scraping should be used to capture platform enterprises.

A big challenge is the inability to capture platform enterprises if they exist overseas. The headquarters of Airbnb is in Ireland and Airbnb in Japan is not responsible for capturing its sales. The Japanese government cannot conduct research on overseas businesses and therefore they cannot be captured.

For private lodging, the "Lodging Trip Statistical Survey" by the Japan Tourism Agency (JTA) should be enhanced to grasp the number of guests by country and occupancy rates. From January 2018, authorized businesses for private lodgings have been included in the scope of the survey. However, challenges still remain in that private lodgings operated by non-authorized businesses cannot be captured.

In addition, there is a need to enhance the statistics of both the providers and users. Since many are currently being used by foreign visitors, it is beneficial to enhance and utilize the "Consumer Behavior Survey of Overseas Tourists to Japan" of the JTA. It is conducted at airports by asking the foreign visitors what they used and by how much. If domestic users increase, it will be necessary to grasp the situation around the sharing economy in the "Household Survey".

Capturing Sharing Economy Prices

It is also important to create real values in order to be incorporated into the GDP system. For example, there is a need to investigate the prices of private lodgings. Since there are no extra services provided, they are thought to be more affordable than existing hotels, and there is a need to investigate the prices separately from hotels and inns. But it is basically a transaction between individuals and it is not realistic to ask the service providers directly for prices like one would to hotels and inns. It is more realistic to collect price data by web scraping from the webpages of platform enterprises such as Airbnb, and create a price index.

There are various types of private lodgings but the price index needs to align with the quality. Coordinating the quality would also be required.

The Value of Free Internet Services

In terms of digital economy, how to capture free Internet services, in addition to the sharing economy, is a challenge. One can casually get in touch with acquaintances by using the Social Networking System (SNS) and exchange ideas. Using Google allows you to easily search for things and its convenience is definitely increasing. But if these are free, consumer expenditure is zero and thus consumption on Internet services does not necessarily increase. Nor is it reflected in GDP statistics.

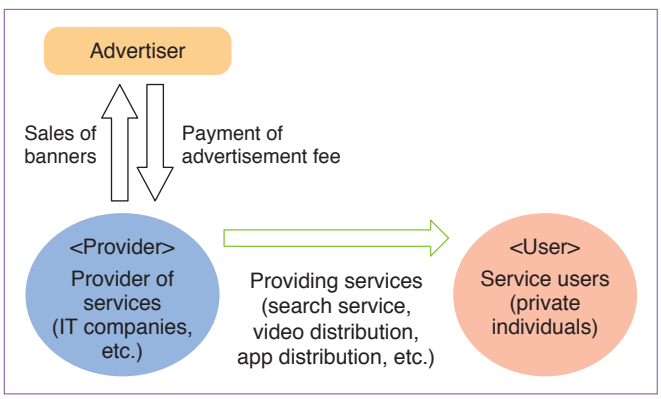
On an analytical level, there have been more attempts to express the increasing convenience in monetary values. The first is when it is considered as a business model like television. Terrestrial television can be viewed free of charge, and various information and entertainment is being offered. Television can be watched free of charge because a portion of the production cost is being paid by the advertiser. If a beverage manufacturer runs a commercial for canned coffee, the sales of that canned coffee are expected to rise. Economic activity can be measured through advertising costs.

Indeed, some enterprises which provide free online services profit through gaining advertising revenue. But there are those that consider the value of Internet services to be much greater than advertising costs. Moreover, there are services like blogs and Wikipedia which do not have advertisements. It would be odd to say that its value is zero because there are no advertisements.

The second idea is investment towards digital assets. Internet enterprises offer free services in return for various information that can be obtained from users who own accounts. Various information such as what articles have been searched and what articles are popular can be obtained together with the attributes of the users. It is the notion that the real value lies in this type of information. When a third party buys the information, the payment data can be obtained to calculate this value. But in most instances, the information is only used internally and not offered outside, and thus calculating the value becomes difficult *(Chart 2)*.

CHART 2

Imagery of free service on the Internet



Source: Mitsubishi Research Institute, Inc., Report on "Research and Analysis on Reconstructing Service Statistics" (Fiscal 2016 contracted research from Office of Statistics Commission), March 2017

TABLE 2

Value of Internet services

	Value of each service (annual)		Respondents
	(US$)	(Yen)	(No. of people)
Search engines	17,530	1,928,300	8,074
Email	8,414	925,540	9,102
Map apps	3,648	401,280	7,515
Video	1,173	129,030	11,092
E-commerce	842	92,620	11,051
Social media	322	35,420	6,023
Messaging service	155	17,050	6,076
Music	168	18,480	6,007

Note: Yen-based value has been calculated by the author using $1 = 110 yen.
Source: Brynjolfsson, Eggers and Gannamaneni (2018) "Using Massive Online Choice Experiments to Measure Changes in Well-being", NBER Working Paper No. 24514

How to Measure Free Internet Services

Even if it is not reflected in GDP statistics, convenience is increasing and thus there have been attempts to capture it as a consumer surplus. If a service that is thought to be worth 10,000 yen can be received at 6,000 yen, then the consumer surplus can be calculated as 4,000 yen. If how much consumers are willing to pay for free Internet services can be figured out, then the consumer surplus can be calculated.

Two methods have been suggested to measure the value of things whose prices the market cannot determine, such as free Internet services. One is to measure the value based on economic statistics under the revealed preference approach. The other is the stated preference approach, and the monetary value is calculated through questionnaire surveys.

We look first at the research findings of the revealed preference approach. Even if the Internet says it is free, we cannot spend all hours on the Internet. We need time to work. Thus, a method to assess the value of the Internet as "labor hours given up by consumers" was proposed. According to a paper titled "The Attention Economy: Measuring the Value of Free Digital Services on the Internet" by Erik Brynjolfsson and Joo Hee Oh in 2012, free Internet service pushed up the annual average growth rate of US GDP by 0.74% from 2007 to 2011. For Japan, according to a paper titled "Consumer Surplus of Information Sharing on the Internet in Japan" by Shinichi Yamaguchi, Hirohide Sakaguchi and Kotaro Iyanaga in 2017, the value of free Internet service was between 3.2% and 3.7% of nominal GDP in 2014.

However, consumption of digital services may have been done simultaneously with other activities, and the time of usage may be overestimated. There is also the possibility that time spent on Internet access may change depending on the data transmission speed.

Next, we look at the stated preference approach. This is what is called the Contingent Valuation Method, and it conducts questionnaire surveys on the value of a particular service. It will ask for the amount of money one is willing to pay for a particular service, or it will ask how much it will take to give up that service. The price that one is willing to pay is called WTP (willingness to pay) and the price of giving up is called WTA (willingness to accept). WTP tends to come out small while WTA comes out big.

According to US research, when subjects were asked about the amount of acceptable compensation on "how much you will require to give up using Facebook for a month", the median value came out to be $38 a month ("Using Massive Online Choice Experiments to Measure Changes in Well-being", by Erik Brynjolfsson, Felix Eggers and Avinash Gannamaneni, NBER Working Paper, No. 24514, 2018). In the same research, WTA for search services was $17,500 annually and email was $8,400, and the assessment values came out rather huge *(Table 2)*. If these research findings accumulate, calculations of the consumer surplus for the entire country will become available.

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