

# Changes in the Fresh Food Wholesale Market Situation and the Importance of Local Food Distribution

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## 1. Introduction

The Wholesale Market Law, which has long played an important function in Japanese fresh food distribution, was amended on June 15, 2018. The purpose of the revision is to increase the sales volume and income of producers by promoting competition and efficiency of wholesale markets which have played an important role in fresh food distribution. According to the revised law, private sector companies can operate the central wholesale market if government certification is obtained. In addition, restrictions on transactions by market participants were relaxed.

As a background on which the wholesale market law has been revised as described above, it is pointed out that a decrease in the volume of transactions in wholesale markets located in cities in recent years and an increase in the volume of agricultural direct stores in rural areas <sup>[1]</sup>.

This paper has two objectives. The first objective is to analyze the actual situation of the decrease in the volume of transactions in the wholesale market and the second is to consider factors of increase in the transaction volume at agricultural direct stores.

Two research methods were adopted. The first is the analysis of the wholesale market data of the Ministry of Agriculture, Forestry and Fisheries <sup>[2]</sup>, and the second is a questionnaire analysis of producers and consumers at agricultural direct stores in Fukuoka prefecture <sup>[3]</sup>.

## 2. Function, structure and current situation of fresh food wholesale market

### 1) Three types of wholesale market and four functions

The wholesales markets in Japan have been set up

based on the Wholesale Market Law established in 1971 and are markets to wholesale fresh vegetables, fruits, marine products, meats and flowers <sup>[1]</sup>. Wholesale markets are required to conduct fair trade under hygienic and efficient facilities. The wholesale markets are classified into three types, central wholesale market and regional wholesale market, and other markets depending on the type of establishment authority, urban population size, market area, etc.

The wholesale market has the following four functions.

① Collecting (assortment), shipping function (collecting a wide variety of products from all over the country and the world, and distributing the required items and quantity quickly and efficiently according to the needs of customers), ② Fair price formation function (prompt and fair evaluation reflecting supply and demand to create highly transparent price), ③ Sales amount settlement function (prompt and secure settlement of sales amount), ④ Information reception / transmission function (information on supply and demand is collected, respectively transmitted downstream and upstream).

### 2) The structure of the wholesale market and the role of stakeholders

Figure 1 shows the structure of the fresh food central wholesale market. The roles of stakeholders in the market are as follows. Establishment authority (administrative agencies) maintains and manages facilities based on the Wholesale Market Law, business regulations, etc., and instructs and supervises operations so that transactions are carried out properly.

The wholesaler who received the permission of the Minister of Agriculture, Forestry and Fisheries, collects goods to be traded in the wholesale market, and sells

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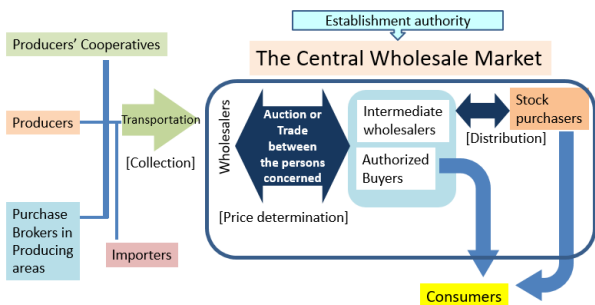
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the goods to intermediate wholesalers and authorized buyers. As collection methods, there are those to be outsourced from producers and shippers, and those purchased and picked up in order to secure a supply amount commensurate with demand. As for sales, there are methods of auction, bidding and relative sales (trade between the persons concerned). The commission fee in the case of consigned and sold by producer or shipper is the amount obtained by multiplying wholesale amount (including consumption tax amount) by the following rate. 8.5% for vegetables, 7.0% fruits, 4.95% fresh marine products, 3.5% meat and 3.0% eggs.

Intermediates are merchants who receive permission of the mayor, and sell the purchased goods by participating in auctions with wholesalers to authorized buyers at a store in the market. They may transfer goods to other markets in the consuming area. They play important functions of evaluating, distributing, and adjusting large amounts of various kinds of goods.

Authorized buyers who are approved by the mayor among retailers are traders participating in auctions with wholesalers. Traders of market-related goods who received the permission of the mayor are merchants. They operate business at stores in the market or outside facilities in order to benefit those who use the market. They run the refrigeration industry, the transportation industry, cafeterias, barbershops, and so on.



**Figure 1 Structure of central wholesale market**  
Source: Tokyo metropolitan central Wholesale Market, Market Guide.

**3) Present situation of the wholesale market and future issues**

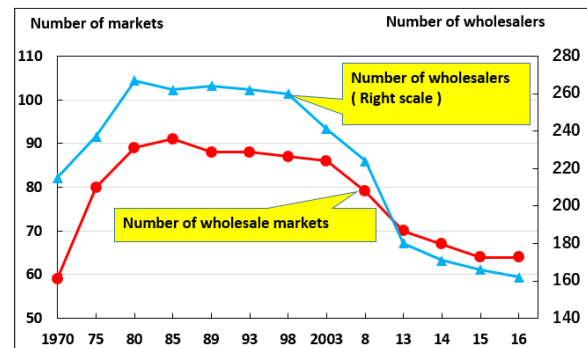
The wholesale market has been developed as a basic infrastructure for perishable food distribution in order to ensure smooth and stable distribution of fresh food products.

Nowadays the wholesale markets face difficult

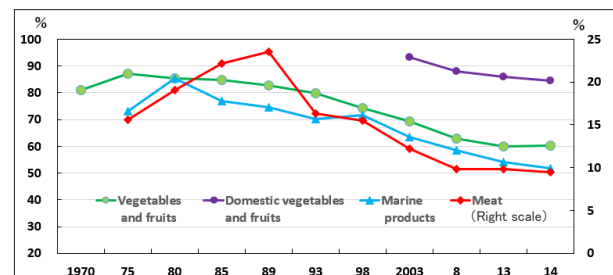
situation due to the following environmental change factors. These are population declines accompanying the declining birthrate and aging population, quantitative changes in food consumption, diversification of consumer needs accompanying changes in social structure, and changes in domestic production structure of agricultural and fishery products.

In the wholesale market, as shown in Figure 2, the number of markets and the number of wholesalers are decreasing. At the same time, as shown in Figure 3, the wholesale market via rate (percentage of products via wholesale markets in total distribution volume) drops, and the handling amount also decreases as shown in Figure 4.

However, the wholesale market must continue to fulfill its mission of stably supplying perishable food items to the people, and important functions that connect the production area and the consumption area are expected. To meet that expectation, it is required to increase the cold storage facilities in each wholesale market and to improve the cold chain system in order



**Figure 2 Transition of the number of central wholesale markets and wholesalers**  
Source: MAFF, On the situation surrounding the wholesale market



**Figure 3 Transition of the wholesale market via rate (weight basis)**  
Source: MAFF, On the situation surrounding the wholesale market

to improve the added value of the handled goods.

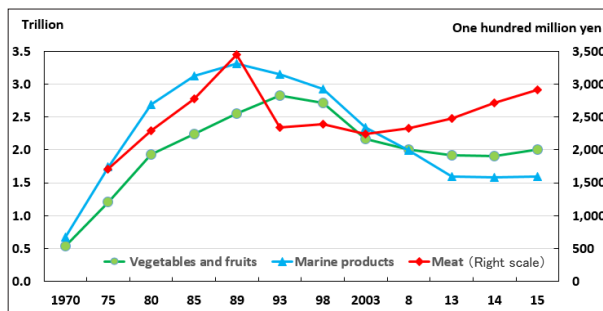


Figure 4 Transition of the sales amount of central wholesale markets

Source: MAFF, On the situation surrounding the wholesale market

### 3. Importance of Local Fresh Food Distribution System

#### 1) Importance of multifunctionality and hospitality of agricultural direct stores

In recent years, agricultural direct stores (hereinafter referred to as farmer's stores) have been established throughout the country along with the decline in agricultural products wholesale market via rate. Farmer's stores have the function to physically and mentally revitalize producers with farm products, and have a hospitality function to familiarize consumers with farm products. These functions are classified into the following 11 functions <sup>[1] [4]</sup>.

① Local economy revitalization function due to increased sales amount

The increase in sales amount of farmer's stores is a major factor that economically activates rural areas.

② Direct exchange function between producers and consumers

Personnel exchange between producers and consumers will share information on rural and agricultural villages, and help resolve mismatches in information. It is a powerful means to restore consumers' trust in local agricultural products.

On the package of goods sold by farmer's store, the name of the producer and the telephone number of the farmer's store are stated. The display of these packages is the ultimate traceability system that guarantees safety and security, leading to the reliability of the products.

③ Function to improve food self-sufficiency ratio

The fact that consumers go to production areas and purchase fresh local agricultural products is highly effective in raising the food self-sufficiency ratio. In farmer's stores, since foreign-made agricultural products are not sold, it contributes to local production for local consumption. Also, the lunch boxes are selling well at the farmer's store. This also contributes to the increase in the sales of local crops and contributes to the improvement of the self-sufficiency ratio of grain.

④ Food mileage shortening function (logistics energy and CO<sub>2</sub> reduction function)

Purchasing at farmer's stores increases food self-sufficiency ratio and shortens food mileage rather than purchasing imported goods. It is effective in reducing logistics energy internationally.

⑤ Safeguard function with freshness of local products like breakwater

The rise and boom of farmer's stores is said to be a regression phenomenon of consumers to local agricultural products. This is not an internationally accepted safeguard by the government but a private safeguard that made freshness of local agricultural products like breakwaters.

⑥ Socialization function of resources that was not socialized

In the farmer's stores, elderly people and women ship agricultural products eagerly. Large-scale agriculture and large mechanized agriculture eliminates elderly people and women, because they do not have much physical power. But small-scale agriculture and small machine-using agriculture accept their limited power. They use their resources to produce agricultural products and ship them to the farmer's stores, so that they are creating their own work places themselves.

More recently, local peoples who have been early retired or who have lost their jobs are plowing farmland and shipping agricultural products to the farmer's stores. The farmer's store has a socialization function of resources that was not socialized.

⑦ Personnel exchange center function in urban and rural areas for green tourism

Many urban residents are visiting farmer's stores, and they fulfill the function of urban rural exchange center.

Since many urban residents are visiting farmer's stores, these facilities perform the function of a personnel exchange center in urban and rural areas.

Tourists from overseas are particularly moved by the beautiful rural village and fishing village scenery in Japan. It is also expected that farmer's stores will become the base for international green tourism in the future.

#### ⑧ Food education promotion function

Local farmer's stores are starting to supply food for school meals. In addition, many producers teach traditional food in the area at school.

Some farmer's stores purchased a vehicle to deliver local food to regional schools. In addition, there are cases where shippers of farmer's store visit to elementary school, teaching as a "local food teacher", and eating lunch together with students.

#### ⑨ Physical health promotion function of producer (medical cost reduction function)

Many elderly producers who have been able to ship to the farmer's stores have gained motivation for production and are rejuvenating their age. As elderly growers work for the production of agricultural products to be shipped to the farmer's store, they go fewer times to the hospital, which contributes to the reduction of medical costs as a result.

#### ⑩ Mental health promotion function of producer

By shipping to the farmer's stores, elderly producers gain self-employment opportunities and become economically rich. There are many elderly producers who feel happy in their lives, and many people are psychologically satisfied. Among them, they become economically and mentally rich, and the number of people going abroad is increasing.

#### ⑪ Function to entertain consumers

Many Farmer's stores grow rape flowers, sunflowers, cosmos, apricots, etc. around the facilities, devises urban consumers to enjoy the four seasons, and provides services to entertain consumers.

There are also farmer's stores, where the local senior citizens party make flower beds around the facilities and give visitors joy.

## 2) Elucidation of physical and mental health promotion function of producer provided by farmer's stores through producer questionnaire survey

### (1) Purpose and method of producer questionnaire survey

Among farmer's stores staff, there was pointed out that "shippers to farmer's stores will feel better

after shipping starts compared to before shipping agricultural products to farmer's stores". In order to verify its authenticity, we conducted a producer questionnaire survey to analyze what kind of physical and mental changes occurred before and after shipping to farmer's stores.

### (2) Attributes of survey respondents

As Table 1 shows, the majority of respondents in the questionnaire survey are female. Also, looking at the composition by age, as shown in Table 2, there are many cases in the late 50s. From the above two tables, it turned out that many of shippers to farmer's stores are women 50 to 60 years old. Especially, there are many shippers in the 50s in the Itosaisai store.

When examining the shipping frequency to a farmer's store in Table 3, "every day" is a majority, and adding "once every 2 days" is about 75%. However, looking at

**Table 1 Gender composition of respondents in the questionnaire survey**

(Unit: people, %)

Gender	Fukufukunosato		Itosaisai	
Male	27	32.1	31	42.5
Female	57	67.9	42	57.5
Total	84	100.0	73	100.0

Source: Survey results on producer group by author

**Table 2 Age composition of respondents in the questionnaire survey**

(Unit: people, %)

Age composition	Fukufukunosato		Itosaisai	
21-25	2	2.4	0	0.0
26-30	1	1.2	1	1.4
31-35	1	1.2	1	1.4
36-40	3	3.6	2	2.7
41-45	1	1.2	4	5.5
46-50	6	7.1	3	4.1
51-55	9	10.7	9	12.3
56-60	19	22.6	19	26.0
61-65	13	15.5	12	16.4
66-70	11	13	12	16.4
71-75	12	14.3	7	9.6
76-80	3	3.6	1	1.4
81-85	1	1.2	2	2.7
86-90	1	1.2	0	0.0
No response	1	1.2	0	0.0
Total	84	100.0	73	100.0

Source: Survey results on producer group by author

**Table 3 Frequency of shipment to farmer's store**

(Unit: people, %)

Frequency	Fukufukunosato		Itosaisai	
Every day	47	56.0	44	60.3
Once in 2days	17	20.2	11	15.1
1-2times per week	13	15.5	7	9.6
Several times a month	1	1.2	5	6.8
Several times a year	1	1.2	3	4.1
No response	5	5.9	3	4.1
Total	84	100.0	73	100.0

Source: Survey results on producer group by author

the annual sales amount at the farmer's stores shown in Table 4, there are about one third of all shippers of 1 million yen or less, and the sales amount is not necessarily large. Since the Fukufukunosato store contains a lot of fresh fish shippers, shippers with annual sales of 401 to 5 million yen make up 20.2%. There are only a few farmer's stores with many fresh fish shippers among the farmer's stores throughout the country. This is evident from the fact that fish is second as the item with the largest sales amount shown in Table 5

**Table 4 Annual sale amount of agricultural products at farmer's stores**

(Unit: people, %)

Annual sale amount	Fukufukunosato		Itosaisai	
	people	%	people	%
Below 0.5 million yen	15	17.9	15	22.7
0.51-1.0 million yen	15	17.9	14	21.2
1.01-2.0 million yen	10	11.9	13	19.7
2.01-3.0 million yen	9	10.7	9	13.6
3.01-4.0 million yen	6	7.1	1	1.5
4.01-5.0 million yen	17	20.2	2	3.0
5.01-7.0 million yen	4	4.7	4	6.1
7.01 million or more	5	6.0	5	7.6
No response	3	3.6	10	15.2
Total	84	100.0	73	100.0

Source: Survey results on producer group by author

**Table 5 Agricultural products with the largest sale amount at farmer's stores**

(Unit: people, %)

Food items	Fukufukunosato		Itosaisai	
	people	%	people	%
Vegetables	39	46.4	41	56.2
Fruit	4	4.8	10	13.7
Rice	2	2.4	2	2.7
Flower	2	2.4	4	5.5
Livestock products	2	2.4	3	4.1
Lunch box or processed goods	5	6.0	11	15.1
Fish	26	31.0	0	0.0
Other	4	4.8	1	1.4
No response	0	0.0	1	1.4
Total	84	100.2	73	100.1

Source: Survey results on producer group by author

### (3) Physical health promotion function of shipper

Table 6 shows the changes in the health condition of shippers. It was revealed that about a quarter of respondents answered "I became energized" after shipping to the farmer's stores.

There is no doubt that the shipper to the farmer's stores will feel better after shipping than before

shipping products. According to Table 7, 21.9% of shippers answered that the number of visits to hospitals has decreased for Itosaisai store.

**Table 6 Changes in physical health condition after shipping to farmer's stores**

(Unit: people, %)

Physical health condition	Fukufukunosato		Itosaisai	
	people	%	people	%
Feel better	22	26.2	20	27.4
Does not change	53	63.1	49	67.1
Not feeling well	8	9.5	1	1.4
No response	1	1.2	3	4.1
Total	84	100.0	73	100.0

Source: Survey results on producer group by author

**Table 7 Changes in the number of visits to hospitals after shipping to farmer's stores**

(Unit: people, %)

Frequency of visit to hospital	Fukufukunosato		Itosaisai	
	people	%	people	%
Decreased	12	14.3	16	21.9
Does not change	52	61.9	40	54.8
Increased	14	16.7	5	6.8
Unknown	6	7.1	12	16.4
Total	84	100.0	73	100.0

Source: Survey results on producer group by author

### (4) Mental health promotion function of shipper

Table 8 shows changes in mental health condition of shippers. According to this, it can be pointed out that 60 to 80% of respondents replied that they became "enjoyable" after shipping to the farmer's stores.

According to Table 9, the reason for becoming fun was "40% to 50%" with "interacting with people", and 30% with "I can price the crop by oneself". In the conventional wholesale market distribution system, price formation is entrusted to others, which is also understood as dissatisfaction or criticism of not being able to participate in price formation.

It can be pointed out that the reasons why farmers are interested in the farmer's stores are influenced by non-price factors such as interaction with people and involvement of price formation. In other words, the wholesale market suggests that it is necessary to

**Table 8 Changes in mental health condition after shipping to farmer's stores**

(Unit: people, %)

Mental health condition	Fukufukunosato		Itosaisai	
	people	%	people	%
Became fun	50	59.5	59	80.8
Does not change	24	28.6	9	12.3
Does not become fun	3	3.6	0	0.0
No response	7	8.3	5	6.8
Total	84	100.0	73	100.0

Source: Survey results on producer group by author

**Table 9 Reasons why you became happy after shipping to farmer's stores (multiple answers)**

(Unit: people, %)

Reasons for becoming happy	Fukufukunosato		Itosaisai	
	people	%	people	%
Contact with people	35	50.7	45	46.4
Become rich	12	17.4	16	16.5
Pricing products by myself	20	29	31	32.0
Other	2	2.9	5	5.2
Total	69	100.0	97	100.0

Source: Survey results on producer group by author

expand contacts with shippers and participate in price formation.

(5) Quantitative analysis of mental health promoting factors of shippers

The results of analyzing factors of mental health promotion of shippers are the equations (1) and (2). The explained variable in both numerical expressions are Y ("mental health" (enjoyed = 1, unchanged = 2, fun out = 3)). The explanatory variables are  $X_1$  ("change in physical health" (cheered = 1, unchanged = 2, healthy loss = 3)),  $X_2$  ("change in sales amount" (increased = 1, slightly increased = 2, unchanged = 3, slightly decreased = 4, decreased = 5)),  $X_3$  ("evaluation of communication" (Yes = 0, No = 1)),  $X_4$  ("Evaluation of self-determination of price" (Yes = 0, No = 1)). Numbers in parentheses are t values, and  $R^2$  is coefficient of determination.

The formula (1) is the analysis result of the shipper at Fukufukunosato store. The following two points can be said from the analysis result. The mental health of shippers is significantly influenced by four factors, "change in physical health", "change in sales amount", "evaluation of communication between shippers" and "evaluation of shipping price self-determination". The explanatory power is 78.1%.

As a result of analyzing shippers of Itosaisai store, the formula (2) was obtained. These four explanatory variables are factors that significantly affect mental health (explanatory power 82.1%).

$$Y = 0.870 + 0.253X_1 + 0.127X_2 + 0.494X_3 + 0.398X_4 \dots \dots (1)$$

(2.939) (3.017) (4.985) (4.051)

$$R^2 = 0.781$$

$$Y = 0.945 + 0.236X_1 + 0.144X_2 + 0.455X_3 + \dots \dots (2)$$

(2.851) (3.648) (4.863)

$$0.361X_4 \dots \dots (2)$$

(4.283)

$$R^2 = 0.821$$

**3) Analysis of comprehensive evaluation (customer satisfaction) factors of farmer's store by consumer questionnaire survey**

(1) Purpose and method of questionnaire survey

As mentioned above, the farmer's stores are the bases of food production and local consumption, and green tourism, and many functions, especially hospitality functions are important. In order for the farmer's stores to further develop, it is necessary as a prerequisite that the farmer's stores accept visits of many consumers and gives satisfaction to them.

We conducted a questionnaire survey for consumers to clarify the evaluation factors and the satisfactory factors for the farmer's stores. Furthermore, using the questionnaire survey results, we analyzed the comprehensive evaluation (customer satisfaction) factors for the farmer's stores.

(2) Characteristics of respondents in the questionnaire survey of consumers

There are many women who are 50 to 60 in the questionnaire survey. The fact that a woman from 50 to 60 years old came to a farmer's store by driving a car was revealed.

The access time to the farmer's stores was 24 minutes on weekdays, 36 minutes on Saturday, 34 minutes on Sunday, the total average was 32 minutes. It can be said that visitors from neighboring cities are very numerous at weekends.

Consumers are aware of places to go shopping at farmer's stores on weekdays with a couple, and as a place to go out on holiday with their families. 73% of the customers who come together are a couple.

(3) Regular grocery purchase place for farmer's stores visitors

56% of the usual grocery purchase place for the farmer's stores visitors was the supermarket. The next 27% was the farmer's stores. Visitors at the farmer's stores used supermarkets.

28% of the purchase objective at the farmer's stores was vegetables, the largest share. Then it is 18% of fresh fish. It can be said that customers are buying "fresh vegetables", which is the biggest product of the farmer's stores. Also, the purpose of buying fresh fish

at the farmer's stores is distinctive.

The average purchase amount per day is 5,145 yen. Since the per capita purchase amount in other surveys is about 1,500 yen, this result can be said to be very large. As a background of high purchase, sales of high-priced items such as fresh fish and meat are affected.

(4) Comprehensive evaluation by item at the farmer's stores and comprehensive evaluation of stores

We analyzed consumers' assessment factors for items such as vegetables and fruits purchased at farmer's stores. We also analyzed the evaluation factors of the entire stores.

We asked the respondents to evaluate to 5 levels for each item sold at the farmer's stores and finally the store was classified at 5 levels. Analysis was performed based on the data. By the way, 5 of 5 levels is very good, 4 is good, 3 normal, 2 bad, 1 very bad.

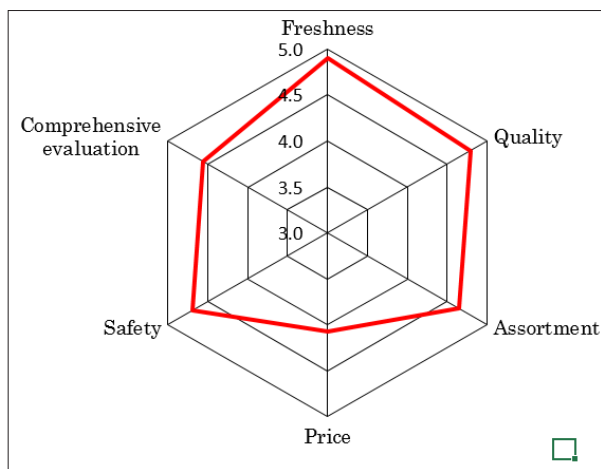
Table 10 shows the overall evaluation of vegetables. 285 respondents rated highly freshness as very good. On the other hand, price evaluation is 5 less than other items, and 4 or 3 is more. This tells us that the

**Table 10 Evaluation items of vegetables and comprehensive evaluation**

(Unit: people, %)

Reasons for becoming happy	Fukufukunosato		Itosaisai	
Contact with people	35	50.7	45	46.4
Become rich	12	17.4	16	16.5
Pricing products by myself	20	29	31	32.0
Other	2	2.9	5	5.2
Total	69	100.0	97	100.0

Source: Survey results on producer group by author



**Figure 5 Radar chart of vegetable evaluation**

Note: 5 = very good, 4 = good, 3 = normal, 2 = bad, 1 = very bad

Source: Results of the questionnaire survey by author

respondents are expecting that the prices of the farmer's stores are lower. Figure 5 shows average values of evaluation items of vegetables on a radar chart. According to the Figure, the average value of freshness is high, but the average price is low.

Table 11 shows overall evaluation of stores. Respondents are giving high ratings on the size of the parking lot, the number of cashiers and the lighting. However, there are many evaluations of three levels regarding attendance attitudes and placement in stores. Especially, there are many evaluations of 2 levels in the store arrangement. Improvement is necessary concerning attitude of attendance and arrangement within stores.

**Table 11 Evaluation items of comprehensive evaluation**

(Unit: people)

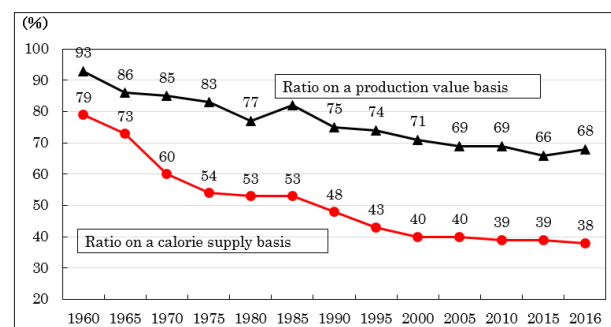
	Evaluation				
	5	4	3	2	1
Hospitality attitude	141	69	68	3	0
Illumination	174	81	26	0	0
Assortment	143	100	31	7	0
Number of cash registers	187	62	31	1	0
Store placement	111	73	54	41	2
The size of the parking lot	222	37	18	3	1
Comprehensive evaluation	134	124	21	2	0

Note: 5 = very good, 4 = good, 3 = normal, 2 = bad, 1 = very bad  
Source: Results of the questionnaire survey by author

### 4. Conclusion

The wholesale market, which is responsible for distributing the produced foods to consumers, is facing difficulties such as the volume handled decreasing as the wholesale market via rate drops. Conversely, farmer's stores are being opened all over the country.

The farmer's stores not only have the function of delivering local fresh foods to consumers, but also



**Figure 6 Trends of total food self-sufficiency ratio**  
Source: MAFF, Food balance sheet.

have the function to physically and mentally revitalize producers and to satisfy consumers.

Because the buying and the selling of local fresh food at farmer's stores also helps to prevent the decline in calorie-based self-sufficiency ratio shown in Figure6, it is necessary to further develop measures to strengthen the function of the farmer's stores.

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## Special note and acknowledgment

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