
TREND OF FOOD CONSUMPTION, MARKETING AND TECHNOLOGICAL DEVELOPMENT IN JAPAN

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ABSTRACT

Trend of Food Consumption

Annual and per capita gross supply of food has kept the level of 2,500 kcal for over 30 years in Japan. Mass media often mention this tendency as “the age of plentiful food.” But the composition of consumed food has changed gradually. Cereal consumption is continuously decreasing. Especially rice consumption has decreased almost by half in recent 50 years. Instead meat consumption is increasing, but the trend of increase is not steep like other Asian countries. The consumption level of Fish, Fruits and Vegetables (F&Vs) and Dairy products are gradually decreasing. This trend is adverse to other Asian countries. The nutritional balance among Protein, Fat and Carbohydrate has kept as a proper level for health, but the ratio of fat is slightly increasing.

The externalization of diet is one of the typical characteristics in Japanese food consumption. Especially since 2000s, the expenditure on home meal replacement (HMR) has been increasing. The simplification of meal is another important trend. For example, recent Japanese, especially young people, do not eat fruits that are hard to peel or big much. Instead, they prefer smaller or cut fruits. Otherwise they might buy other sweets.

Two important demographical trends have been affecting the changes of diet pattern mentioned above. First is the continuing development of aging society. Different patterns of diet between aged people and the younger generation can be observed on many types of foods. Second is the increase of the one-person household. The single person usually prefers to eat outside or to buy HMR or repacked foods.

Trend of Food Marketing

Although some new and diversified marketing channels such as farmers’ markets and direct contracts have developed, Japanese food marketing channel is still composed of multi-staged structure. But the bargaining power has been shifted from the wholesale stage to the retail stage. Still the total sales at the retail sector have not been increasing in recent years. Therefore, the large-scale supermarket chains have developed various types of retail facilities, including big shopping malls, drugstores and discount shops, to attract more customers.

Over 50% of the customers select supermarket as the main channel to buy fresh produce. The ratio of food to the total retail sales is still increasing in the supermarket chains. Most supermarket chains place importance on the good assortment of food products.

Food safety is signified as the very important issue by both customers and retailers. Some large-scale retail chains have been introducing the strategies to confirm the level of food safety and quality, such as Good Agricultural Production (GAP), traceability system and other inspection methods. This tendency requires the agricultural and food manufacturing sectors to introduce related inspection systems and practice them continuously.

Expected Technological Development Related to Food Distribution

As both the one-person household and the aged people are increasing, it seems to be inevitable that the trend of externalization and simplification will continue on the food market. R&D sector cannot ignore the tendency. In addition, both consumers and food business sectors place more importance on food safety.

For example, the technology related to repacking or cutting foods into small units will be expected by both manufacturers and retailers. The development of temperature control technology is also important both for fresh food distribution and hot meal (including HMR) operation. In addition, if the technology of food inspection develops and diffuses at a reasonable price, it would contribute to raise the level of food safety and trustful relationships among the members of food industry.

But some of these technologies might cause more ecological burden. Japanese distribution system has achieved quick delivery in a relatively small lot and brought benefits for customers, but this system also has been causing various ecological burdens. New technology for reducing this burden on the environment should also be taken into consideration.

KEYWORDS

externalization of diet, simplification of meal, supermarket chain, food safety

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1. TREND OF FOOD CONSUMPTION

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Demographical Background

- Decreasing trend of total population
 117 billion(1980)→ 128 billion(2010)→ 108billion(2040)
- Rapidly ageing of Japanese society... both urban and rural
 Elderly ratio: 9.1%(1980)→ 23.0%(2010)→ 36.1%(2040)
- Increasing small-family-member household
 esp. one-person household 32.4%(2010)
 household only with aged person 19.9%(2010)

↓

- Decreasing amounts of total food consumption
- Diversifying preference for foods
 ... between younger generation and aged people
- “Externalization” of food consumption: dependence on processed food, Home Meal Replacement, and eating out

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Stagnant Food Supply/Consumption

Table: Net and Per Capita Supply/Consumption of Food in Japan

	Yr 1980	Yr 1990	Yr 2000	Yr 2010
Total Calorie(kcal/day)	2,593	2,840	2,843	2,458
Annual & Net Food Supply(kg/year)				
Rice	78.9	70.0	64.6	59.5
Other cereals	34.0	33.5	33.9	33.9
Potato and Sweet Potato	17.3	20.6	21.1	18.6
Beans	8.5	9.2	9.0	8.4
Vegetables	113.0	108.4	102.4	88.3
Fruits	38.8	38.8	41.5	36.5
Meat	22.5	26.0	28.8	29.1
Egg	14.3	16.1	17.0	16.6
Dairy products	65.3	83.2	94.2	86.4
Fishes	34.8	37.5	37.2	29.6
Sugar	23.3	21.8	20.2	18.9
Oil products	12.6	14.2	15.1	13.5

Source: Food Balance Sheet (FAO and MAFF)

- Total calorie intake has kept the level of 2,500kcal for 30 years
- Continuing decrease of rice consumption
- Decrease of vegetables, sugar... adverse to other Asian countries
- Meat consumption is slowly increasing
- Several problems in “the Age of Plentiful Food”

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“Externalization” of Food Consumption

- Stagnant expenditure for **eating out**
 ... consumers' saving behavior, decrease of offered price
- Increase of utilizing **HMR**
 ... saving cooking time, losing cooking ability

Table: Ratio of Home Meal Replacement(HMR) and Eating Out to Food Expenditure (unit:%)

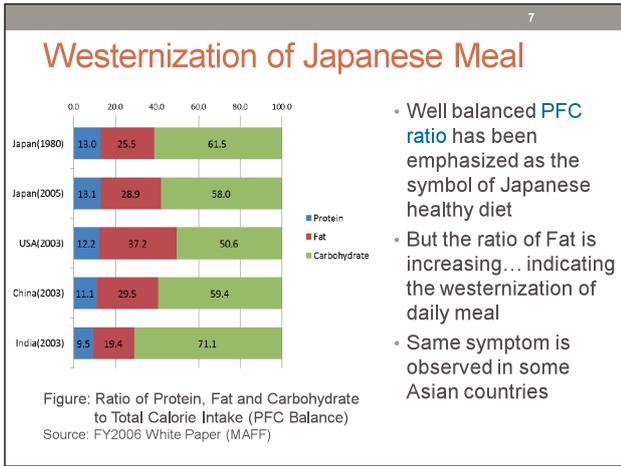
		Yr 2000	Yr 2009
Total Household	HMR	10.8	11.6
	eating out	16.9	16.8
	total	27.7	28.4
One-person Household	HMR	12.7	14.3
	eating out	40.0	31.5
	total	52.7	45.8
Aged Couple Household	HMR	10.3	11.4
	eating out	10.1	10.6
	total	20.4	22.0

Source: Family Income and Expenditure Survey

From FIE survey...

- Increasing dependence on HMR... even in aged households
- One person households' heavy dependence on HMR and eating out

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- Well balanced PFC ratio has been emphasized as the symbol of Japanese healthy diet
- But the ratio of Fat is increasing... indicating the westernization of daily meal
- Same symptom is observed in some Asian countries

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Changing Diet Pattern at Home

From [Iwamura 2003, 2007]

- “Escape” from cooking ... depending heavily on HMR, processed foods
- Difficulty of meal with every family members
- Having less interest in daily meal
- Causing nutritional imbalance and lifestyle-related illness

“Extreme” Examples of Meals at Home
Source: [Iwamura 2007]

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Qualitative Analysis: Case study about fruit consumption at home

[detailed survey of food consumption-related behaviors]

- Collecting detailed records of daily meals at household level (2 weeks)... purchase, storage, menu of each meal, important events for family members
- Classifying 40 respondents into 4 types by Cluster Analysis Method

Type	num.	respondents' attributes	characteristics of attitude about fruit purchase
Appearance Emphasizer	8	mainly 30's, having small children, low income, dual-income	no interest in written information, emphasizing appearance
Unconcern	8	mainly 30's, having small children, low income, stay-at-home housewife	generally unconcern about fruit consumption
Quality Emphasizer	12	mainly 40's, high income, stay-at-home housewife	emphasizing the importance of quality, negative about the appearance
Well-balanced Customer	12	mainly 40's, high income, dual-income	take importance on both appearance and written information, concerning about convenience

source: [Sakurai et. al 2012]

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(Main Findings)

- Not many opportunities to buy and enjoy fruits
- Many customers prefer fruit which is easy to eat ...no need to peel, small
- Some consumers prefer small-packaged or cut fruits
- Few consumers who utilize fruits for processed foods ex. Jam, Juice

Type	Volume of purchased fruits (unit)	Expenditure for purchasing fruits (JPY)	Ratio of opportunities using knives etc.(%)	Ratio of opportunities for eating fresh fruits (%)
Appearance Emphasizer	4.8	1,016	47.3	90.5
Unconcern	4.3	1,120	34.3	93.5
Quality Emphasizer	5.0	2,051	48.2	62.4
Well-balanced Customer	7.3	1,510	41.6	85.2
Ave. or Total	5.5	1,503	42.6	81.1

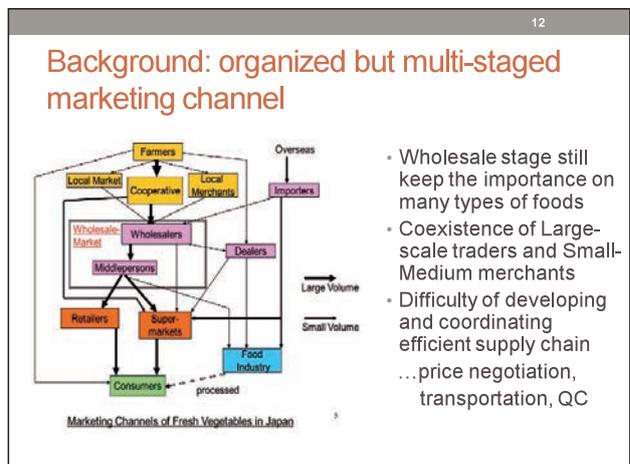
source: [Sakurai et. al 2012]

- Two important standard for selecting fruits: appearance/ written information (production area, organic, certified...)

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2. TREND OF FOOD MARKETING

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Supermarket Chains in Japan

- Development of large supermarket chain ... merger, alliance among supermarkets
- But the concentration ratio is relatively low cf. concentration ratio of GMS in Japan (2002)
CR3 = 37% CR5 = 49% CR10 = 66%
- Difficulty of entry by foreign supermarket enterprises
- Importance of food marketing on supermarket management ... high sales ratio on total sales : over 50%? customers' custom of frequent purchase of food
- Increase of buying power ... dominant bargaining position on food transaction
- Developing new channels ex. Drugstore, Discount store, Internet sales...

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New or Developing Marketing Channels

1) Convenience Store (CVS)

- Locating all over Japan... including rural areas
- Utilizing IT technology for efficient management ... POS data analysis, Optimization of distribution
- Diversifying types of customers: aged people, young ladies...
- Dealing mainly with processed foods and HMR

2) Farmers' Market (FM)

- Increased since late 1990's → Total Number (2010):16,816
- Flexible channel for farmers ... can decide price by him/herself, easy package
- Important marketing channel for buying local (fresh) foods
- Market management: more organized than other countries' FM
- can FM really be the place for communication?

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Issues Related to Food Safety

- Continuing accidents related to food safety ... BSE(2001-), Food poisoning scandal(often), radioactivity effects(2011-)
- Distributors (esp. Retail sector) are nervous about food safety problems

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Retailers requirements to manufacturers/farmers

- GAP(Good Agricultural Practices)/GMP
- ISO series standard
- HACCP

* Sometimes causing hard burden to introduce these systems

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3. EXPECTED TECHNOLOGICAL DEVELOPMENT RELATED TO FOOD DISTRIBUTION

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1) Technologies related to packaging

- People prefer smaller package ...easy to purchase
- Both manufacturers and distributors are interested in this issue
- But the increase of small-packaged goods might increase waste
- Packaging calls for the development of cutting technology

[expected technologies]

- Device for packaging which is easy to manipulate
- Development of high-performance materials for packaging
- Cutting technology to keep freshness/safety

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2) Temperature Control Technology

- Many people depend on processed food and HMR
- Many kinds of foods are displayed using devices for temperature control
- Extension of food distributional distance
 → need to keep freshness and quality

[expected technologies]

- Development/Enlargement of temperature control chain
- Temperature control within the distribution device (cars,...)
- Energy-saving technology for efficient operation of devices

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3) Technology related to food inspection

- Increasing scandals of false labeling on food/menu
- rise of new risks for food safety
 ...new diseases, discovery of new risky chemical substances

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Causing...

- Consumers' suspicion about foods and food industry
- The corruption of trustfulness among traders

[expected technologies]

- Technology for identifying real varieties/ingredients
- Small device for inspection which is easy to handle

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Some Additional Points of Note

1) How to diffuse these useful technologies

- Some technologies are diffused only at the limited part ... on high-quality goods, in limited countries, only introduced in large-scale companies
- Cost reduction
- Standardization of related technologies among countries

2) Connecting information among each marketing stage

- Some technologies are diffused at the limited stage of marketing/transaction
 ex. Temperature control, Information traceability
- How can we connect each stage and optimize the total efficiency and safety of distribution?

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Thank you for your kind attention!



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Chair Ando: Final presentation. The last speaker is Dr. Seiichi Sakurai, from Chiba University. The title is “Trend of Food Consumption, Marketing and Technological Development in Japan.” He is better at Japanese than English, but he will make his presentation in English, so please start.

Dr. Seiichi Sakurai: Thank you, Dr. Ando, and good afternoon, ladies and gentlemen. I’ll try my best to make this presentation in English. My name is Seiichi Sakurai, and I work for Chiba University, Japan. Today I would like to explain about the “Trend of Food Consumption, Marketing, and Technological Development in Japan.” And the contents of my presentation are like this. At first I will explain the general situation of food consumption in recent Japan, and then I will talk about the characteristics of the food marketing channel in Japan, and then finally I would like to suggest roughly, not in detail, roughly, about the expected new technology which can contribute to the development of food distribution or food transportation.

The first part is trend of food consumption. Before explaining the trend of food consumption we have to understand the general situation of demographics in Japan. The total population of Japan is 120 to 130 million, sorry, I made a big mistake on the slide – 128 million now – but the total population has already been decreasing. In addition, Japan is now experiencing a very high level of aging society. The elderly ratio is over 20 percent now and we estimate it to rise to nearly 40 percent in the future. Another important characteristic is that the number of small-family-member households is increasing, especially one-person household which consist of only one member is still, is already composed of about 30 percent of Japanese total households.

This background might cause the following matters. Maybe the total food consumption, the amount of total consumption, will decrease, and people’s preference for food will be diversified, especially diversified between the younger generation and aged people. And people will be more dependent on processed food, home meal replacement, and eating out. We call this situation the externalization of food consumption.

And this table shows the per capita consumption level of food in Japan based on the statistics of FAO. Total calorie intake has kept at the level of about 2,500 kilocalories for the recent 30 years; the trend is very, very stable. But the consumption level of each food item is quite different. Some are increasing and others are decreasing. A typical example of decreasing food is rice. Nowadays the average Japanese eats only less than 60 kilograms in one year. And the consumption level of vegetables and sugars is also decreasing. And in many Asian countries, vegetable consumption or sugar consumption is increasing as each country’s economic level develops, but in Japan we can observe the inverse situation.

The only increasing food item is meat consumption, but still, the level of increase is not so high and nowadays is stable.

And another, this table shows the level of, the ratio of home meal replacement and eating out to total food expenditure in each household. And you can easily find that nowadays the average Japanese household pays nearly 30 percent of food expenditures for home meal replacement or eating out. But the expenditure for eating out is nowadays stable. Someone says that it has been decreasing. Instead, many people pay much money for home meal replacement. This is typical characteristic, recent Japanese food consumption. And especially the one-person household pays more money to HMR or eating out.

This chart shows the balance of fat, protein and carbohydrates to total calorie intake. Every day we eat many kinds of food and take nutrition, and the government and some nutritionists emphasize that the balance between protein, fat, and carbohydrates, PFC, is well-balanced in the Japanese diet. They often emphasize it. But nowadays, this figure shows that the level of fat, the ratio of fat, is gradually increasing. This indicates that the Japanese daily meal pattern, diet pattern, is westernized. People are nowadays eating more meat, more oily food, or more confections, and so on.

And this slide contains very shocking pictures. The upper picture is one example of a family's breakfast, and the whole breakfast is composed of snack foods, soft drinks, biscuits or confections. And the latter picture shows one example of one family's supper. And in this family, no family member cooks; instead they buy all the dishes at the supermarket. All of the dishes are composed of HMR.

And I cited these pictures from a famous marketing planner named Iwamura's book. Ms. Iwamura emphasized that recent Japanese families are escaping from cooking. They are heavily dependent on processed foods. She also emphasizes that in recent Japanese families it is very difficult for family members to eat dinner, supper, or breakfast together. Each member eats each meal at any time they like.

And her statement is often criticized by some experts. She might express too much of an abnormal situation, abnormal example, but still, I have to admit that some Japanese families now have less interest, or in some cases, no interest in the daily meal, and these situations might cause a nutritional imbalance or life-related illness, diseases.

And what I mentioned before is mostly based on public statistical data, but to understand the situation, the characteristic of daily meals, it is important to collect original data and investigate the typical characteristics of daily meals.

So this is the example that our research team conducted several years ago. We asked 40 respondents to keep detailed records of everyday's meal. What did you eat? What kinds of food did you buy at the supermarket during two weeks? And we collected the data and utilized some kinds of statistical methods, and investigated the characteristics of daily meals in Japanese households. And today time is very limited so I will explain only a few findings related to fresh fruit consumption at home.

Generally speaking, most respondents have very few opportunities to buy and enjoy fruits. Nowadays Japanese people don't buy and enjoy fresh fruits, and many respondents, customers, often buy fruits which are easy to eat. A typical example is small fruits on which you don't have to use a knife. You don't have to peel. And some respondents prefer small packaged fruits or cut fruit at supermarkets because it is very easy to eat.

And we can find that people have two standards when they select and buy fruits. One standard is appearance, size, color, or having scars or not. Another standard is written information, production area, this fruit is organic or not, this fruit is produced under a certified system or not. And we also found that most respondents do not use both standards. Maybe 20 or 30 percent of respondents use both standards. Many respondents use only one standard when they buy fruit.

The next stage is the trend of food marketing channels, and this figure is one example of a marketing channel from farmers to consumers. This is the example of fresh vegetables. And concerning many kinds of food, generally speaking, in Japan, the wholesaler stage, still keeps much importance in the construction of the marketing channel. In addition, there are many types of traders between the inside the marketing channel, but both large-scale traders, and medium- or small-scale merchants both coexist in the marketing channel. This is the typical characteristic of a Japanese marketing structure.

And this chart shows the ratio of expenditures for food to which types of retailers. And nearly 60 percent of food expenditures are paid to supermarkets. In Japan nowadays the main place for food purchasing is the supermarket. On the other hand, small-scale or medium-sized retail stores, such as grocers, small fruit shops or butchers, the importance of a regular retail store is decreasing nowadays.

So I have to explain the recent characteristics of supermarkets in Japan. There are several large giant supermarket chains in Japan, Aeon, Ito-Yokado, Daiei, and so on, but still, the middle-sized supermarket chains also coexist

in Japan. So the concentration ratio is relatively lower than other developed countries. Concentration 3, CR3, means that the sales of three major Japanese supermarkets to total sales of Japanese supermarkets, CR3 accounts for less than 40 percent. CR10 accounts for less than 70 percent. This level is lower than other developed countries' concentration level.

And many supermarket managers think that a good assortment of food can contribute to the development of each supermarket store. They think food marketing is very important to grow their store and supermarket enlargement.

So the buying power of supermarkets is increasing inside the marketing channel, so in some cases, a few, not many, but some supermarkets sometimes cause inappropriate transactions. For example, a supermarket forces producers to, in the process of price negotiation, they force them to lower the prices.

And there are many types of stores that exist in Japanese marketing channels. I will explain two examples.

First is convenience stores. You can easily find the stores all over Japan. One advantage of a convenience store is that they are utilizing information technology for making management more efficient or optimizing the distribution system. And if you go to convenience stores, many kinds of foods are sold, but most foods are processed foods or HMR. They don't usually deal with fresh foods.

Another important and nowadays developing channel is the farmers' market, the farmers' market revival. The number of farmers' markets has gradually increased, and for farmers, the farmers' markets are signified as a very flexible channel for selling their produce because if you are a farmer and you want to ship produce to the farmers' market, you can decide the prices by yourself. You don't have to follow the severe and hard rule related to scaling or standardization. It's very easy for packaging. And for consumers, the farmers' market is also signified as an important marketing channel for buying local fresh foods. Some consumers are strongly interested in local products. For them the farmers' market can be a good place to buy fresh local foods.

And in 2001, BSE-infected cows were found in Japan. Two years, we experienced the accident of the atomic power station, so the radioactive effects are still serious issue. Many kinds of accidents related to food safety happen, so distributors, especially retailers, are very nervous about food safety issues. So especially large-scale retailers often require manufacturers or farmers to introduce some kind of certified system to certify their product quality or food safety.

A typical example is introducing GAP, Good Agricultural Practices, ISO-related standards, or HACCP and I agree that introducing these systems can contribute to reduce the risks related to food safety, but I have to say that introducing these systems is, in many cases, very costly, so small-scale manufacturers or farmers, it's very hard to introduce these systems.

And at the final stage, I'd like to suggest roughly some expected technology which may contribute to develop food distribution, especially food transportation.

The first proposal is packaging technology, packaging-related technology. As I mentioned before, recent Japanese consumers prefer small-packaged foods because they are easy to buy or purchase. And packaging technology usually calls for the development of cutting technology, cutting foods or products very safely or in good taste. Expected technologies are, for example, a device for packaging, easy to handle or manipulate, or new high-performance materials good for packaging.

The second proposal is technology related to temperature control. Many people, as I mentioned before, depend heavily on processed food and HMR in recent Japan, and to deliver processed food or HMR, it is very important to keep the temperature level at an appropriate level. So expected technologies, for example, are temperature

control within the distribution devices and so on. And I'd like to say the importance of energy-saving technology related to temperature control. Many kinds of devices have been developed related to temperature control, but some devices take much energy, and energy-wasting, so we have to reduce the energy.

The final proposal is technology related to food inspection. Nowadays many kinds of new diseases or risky chemical substances are found. New risks for food safety are still arising, and since last month many Japanese food manufacturing companies or restaurants caused a scandal for the false labeling of food, so both consumers and traders are suspicious about food themselves, and the food industry at the stage of transaction. Both buyers and sellers seem to lose trust with each other. So if there is one good technology related to identifying the varieties of ingredients, it can contribute to reviving the trust.

And finally, these two points, I have to explain two additional points related to when you consider about the development of food distribution technology. First is how to diffuse new technologies. We always know that many kinds of new technologies have already been developed and some are already diffused. But in some cases good technology is diffused only in a limited part, for example only introduced in expensive goods, only introduced in limited countries or areas. So if possible we have to reduce the barrier of diffusion by for example reducing cost or trying to standardize each rule related to technology.

Another point is connecting information among marketing, each marketing stage. As I mentioned before, the Japanese marketing channel is well-organized but consists of multi stages so sometimes some technologies are diffused in a limited stage. For example, one technology is diffused only in the farming sector; other technologies are introduced only at the retail sector. If possible we have to connect these technologies to all of the stages and try to optimize the efficiency totally among the channels between farmers and consumers. That's all for my presentation. Thank you for your attention.

Chair Ando: Thank you very much for the stimulating presentation for Japanese. If you have some simple question, please raise your hand. Okay. The time is a little bit behind, so can I move on to the discussion time, okay? So thank you. Please give him a big hand.