

SURVEY ON FRESH FRUITS DEMAND IN TOKYO**Alias Abdullah, Hajime Kobayashi, Ichizen Matsumura and Toshinobu Matsuda**

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ABSTRACT

Tokyo City fresh fruits consumption survey reports on the development, data collection and data analysis strategies and the major findings of the survey. During the early winter of 2008, surveys were administered to 71 of Tokyo City residents to provide increased understanding on fresh fruits consumption issues at different location of train station in Tokyo around Yamanote Line. The survey was designed to respond to the following question: "What concerns do Tokyo City residents have about fresh fruits and what do they perceive about tropical fresh fruits and fruit juices?" Also "What factors determine the Tokyo consumers in choosing fresh fruits?" The fact of fast-moving society in Tokyo city make people turn from time-consuming food to more faster food such as fresh fruits and other ready-to-eat food. We analyze our spending behavior analysis in the perspective of age, gender, working status, number per household and income. Most of the findings in this study tally with our early hypotheses which are; Tokyo residents think that fruits are important for health, female consume fruits more frequent than a male, younger generation eats fruits more that the older, and older generations consume more fruit juices.

Key words: survey analysis, demand elasticity, fresh fruits, tropical fresh fruits, fruits juices,

INTRODUCTION

Japanese fresh fruits consumption pattern has been undergoing dramatic changes over the last 35 years due to the changes in household income, aging population, and westernization of lifestyles. Our previous study on the analysis of Japanese Household Demand for Fresh Fruits, 1991-2006: Based on Cities with Prefectural Government and Highly Populated Cities (Abdullah *et al.*, 2009 and Alias *et. al.*, 2011), has found that Japanese household fruits consumption for Tokyo City has been declining since 1991 except for banana and orange. The elasticity for most of the analyzed fresh fruits for Tokyo households are price elastic except for other fruits and income (expenditure) elastic for apples, mandarin oranges, pears, peaches, watermelons, and other fruits.

In order to understand the fresh fruits consumption behavior in Tokyo, it is essential to analyze not only secondary data but also primary data. This study reports on the development, data collection and data analysis strategies and the major findings of the Tokyo City Fresh Fruits Consumption Survey. During the early winter of 2008, survey was administered to 71 respondents of Tokyo City residents. Understanding fresh fruits consumers' concerns, fruits-related behaviors and fruits-related competence (local fresh fruits versus tropical fresh fruits and fruits juices) in Tokyo is a first step toward identifying and advocating for necessary changes in the local fresh fruits demand system.

MATERIALS AND METHODS

a. Data collection and analysis

Tokyo Fresh Fruits Consumption Survey based on fresh fruits consumer interviews were conducted at different train station in Tokyo around Yamanote Line such as the stations at Tokyo, Hamamatsucho, Ikebokuro, Shibuya and Shinjuku. The train stations were chosen in order to find more variances of the targeted respondents with different level of income and social status. We pre-tested the survey by administering it to individuals with varying age, gender, occupation, number per household and income levels. We used one method to survey Tokyo residents about fruits consumption issues by approaching directly to the consumer and interview them on the spot. We conducted the survey on December 13-18, 2008 between 10.00 a.m to 3.00 p.m at the selected area.

b. About the survey respondents

Table 1 contains demographic data on survey respondents. In the survey analysis, the

respondents were classified based on three different level of age.

Table 1. Demographic data on survey respondent

Demographic	Classification	Frequency (person)	Percentage (%)
Gender	Male	50	70.4
	Female	21	29.6
Age	Young (Less than 26)	30	42.2
	Adult (26 to 50)	28	39.4
	Senior (More than 50)	13	18.4
Occupation	Student	29	40.8
	Work	39	54.9
	Others	3	4.2
Annual Income (yen)	Lower (Less than 1.8 million)	37	52.1
	Middle (1.8 to 3.6 million)	24	33.8
	Higher (More than 3.6 million)	10	14.1
Person per household	1 to 2	49	69
	3 to 4	15	21.1
	More than 4	7	9.8

Source: Self-survey

Our early hypothesis suggested that the consumers at all class of age believe that fruits are very important in preventing disease such as alzheimer, cancer, high blood pressure, diabetes, and heart disease (FAO/WHO, 2004). Second hypothesis is young people eats fresh fruits in daily basis more than the old generation because young generation moves a lot, easy to consume hard food, more knowledgeable about health information and more social. Older generation people on the other hand, drinks more fruits juices because fruits juices easy to consume as well as more choosy for their diets.

The spending behavior on food also differs based on gender as we believe female concern more about health than a male. Therefore, we expected that the decision of spending on fresh fruits should be different between male and female. Spending behavior on fresh fruits also depends on the working status of the consumers. Student and working class people spend more than half of their daily life outside the house. Therefore, they are expected to consume fast prepared fruits like apples and bananas as well as fruits juices especially for breakfast. Retired person and housewives whose spend more time at home might prefer more 'time-consuming' fruits such as orange and watermelon. Number per household plays an

important role in the spending decision on fresh fruits. Based on an Annual Report on the Family Income and Expenditure Survey 2008 by Statistics Bureau, Ministry of Internal Affairs and Communications, the average number of person per household for Tokyo city in 2008 is 2.18. Our classification was made because we want to check either the more household member spend more money with more variety of fresh fruits or not.

One of the purposes for Tokyo city survey was to investigate whether fresh fruits spending behaviors varied according to respondents' income level. These differences help us to better understand the impact of income level on fresh fruits spending behaviors. High income people are expected to spend more on fresh fruits as they have extra income.

RESULTS

This section is organized according to the dominant themes most relevant to respondents. These are arranged in the order of their importance. Note that broad categories are broken into smaller sub-themes and addressed depending upon their relevance to respondents. Table in each section list out the frequencies and percentages for survey items pertaining to problems and concerns related to fresh fruits consumer behaviors. The broad themes addressed in the following section including the frequency of eating fruits, place where consumer usually bought the fruits, reason for preferences in choosing between fresh fruits, tropical fresh fruits and fruits juices, and the familiarity of imported tropical fresh fruits.

In an effort to understand respondents' concerns regarding the decision on the spending for fresh fruits, the survey included items that addressed issues such as the annual spending on fresh fruits, tropical fresh fruits and fruits juices. The survey on annual spending on fresh fruits goes much further as we also asked the consumer about their spending on 14 selected fresh fruits in market such as apple, mandarin orange, grapefruits, orange, other citrus, pear, grape, persimmon, peach, watermelon, melon, strawberry, banana and other fruits.

a. Eating Fruits Behavior Analysis

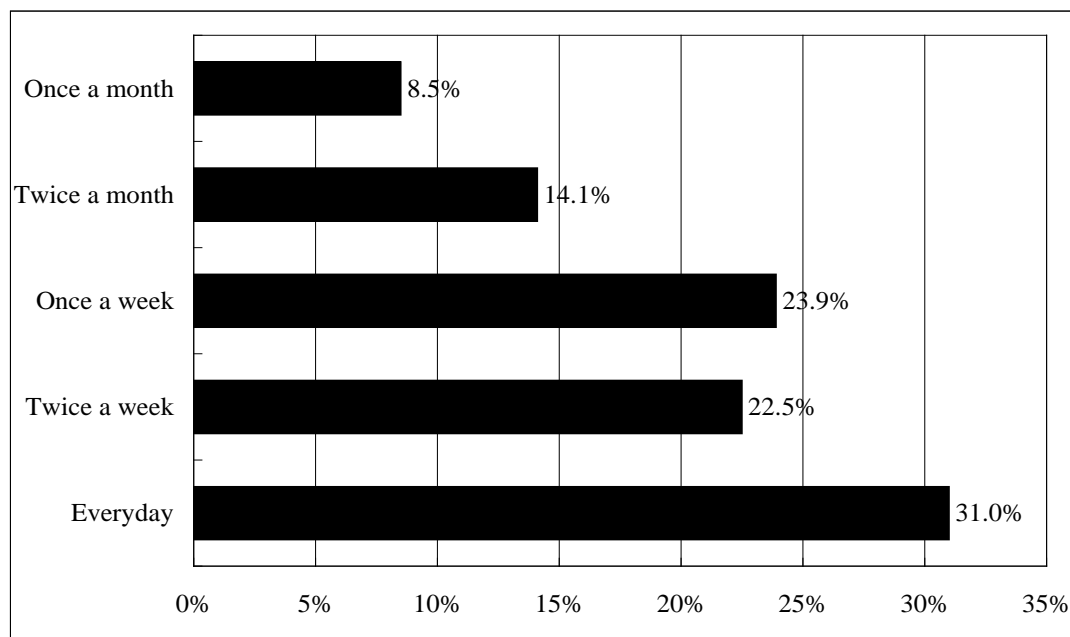
i. Frequency of eating fruits

The result in Figure 1 has shown that 31.0% of the respondents eats fruits everyday while 22.5%, 23.9%, 14.1% and 8.5% of the respondents either take fresh fruits twice a week, once a week, twice a month or once a month, respectively.

Table 2 shows the cross tabulation analysis for the frequency of eating fruits among 71 respondents. High percentage of respondents who consume fruits on frequently basis are

those who are female, young, those who are student and work, lower class income, and household size less than 4. Many of male respondents eats fruits twice a week. This indicates that, female eats fruits more frequently than a male because they concern more about health. Despite of lower income and more time spend outside the house, young generation Japanese were found to eats more fruits than adult or senior citizen. This finding really interesting as it challenge other research findings which indicates that the decreases in young generation fresh fruits consumption is due to young generations find it troublesome to peel or cut fruits. The previous research also found the young generation Japanese prefers supplements or the convenience of fruit-based beverages as compared to fresh fruits (Japan Today, 2010).

Figure 1. Eating fresh fruits frequency



Source: Self-survey

Table 2 Cross analysis for the frequency of eating fresh fruits

Demographic	Classification	Total	Significance	Everyday	Twice a week	Once a week	Twice a months	Once a month
		Respondents	Level	(%)	(%)	(%)	(%)	(%)
Gender	Male	50		18.0	30.0	24.0	18.0	10.0
	Female	21	1%	61.9	4.8	23.8	4.8	4.7
Age	Young (Less than 26)	30		30.0	30.0	13.3	16.7	10.0
	Adult (26 to 50)	28	10%	28.6	21.4	28.6	10.7	10.7
	Senior (More than 50)	13		38.5	7.7	38.5	15.4	0.0
Occupation	Student	29		27.6	17.2	24.1	13.8	17.3
	Work	39	10%	33.3	23.1	25.6	15.4	2.6
	Others	3		33.3	66.7	0.0	0.0	0.0
Annual Income (yen)	Lower (Less than 1.8 million)	37		35.1	18.9	21.6	10.8	13.6
	Middle (1.8 to 3.6 million)	24	5%	33.3	37.5	12.5	12.5	4.2
	Higher (More than 3.6 million)	10		10.0	0.0	60.0	30.0	0.0
Number per household	1 to 2	49		30.6	24.5	22.4	14.3	8.2
	3 to 4	15	10%	33.3	26.7	20.0	20.0	0.0
	More than 4	7		28.6	0.0	42.9	0.0	28.5
Frequency	Number of respondents	71		22.0	16.0	17.0	10.0	6.0

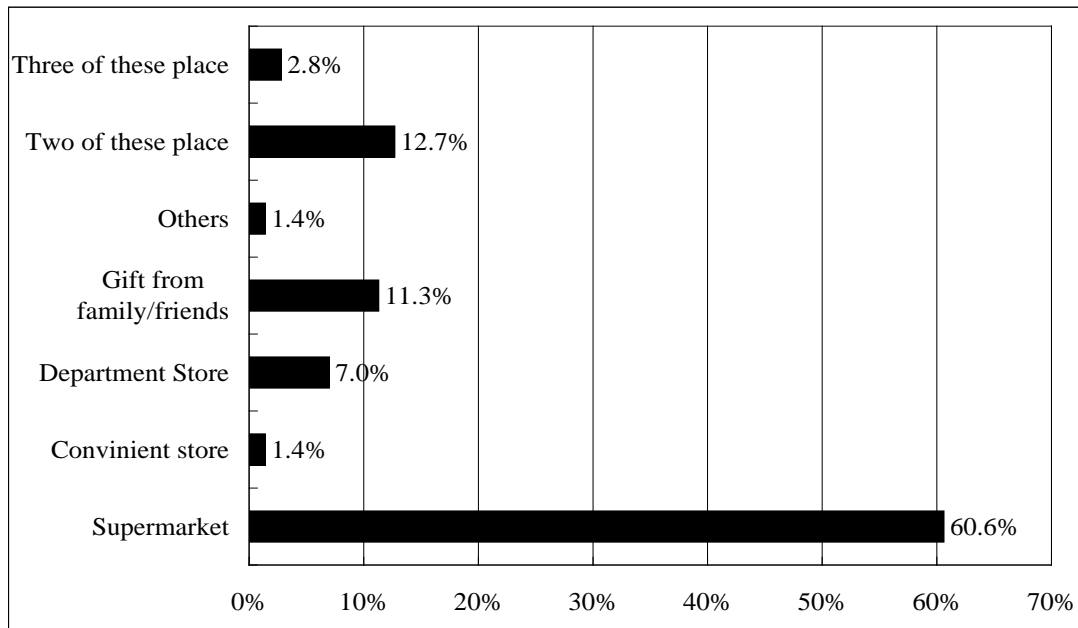
Source: Self-survey

The consumption survey based on income and household size reveals that the lower income group and less than 2 persons per household consume fresh fruits more frequent than other group. This situation is probably because this group of consumers are young, single and lack of time to prepare other food. This study finding agreeable with our previous research which indicates the income elasticity for most of the analyzed fresh fruits for Tokyo household are elastic (Abdullah *et. al.*, 2009 and Alias *et al.*, 2011).

ii. Place to buy fruits

Fresh fruits, tropical fresh fruits and fruits juices are easy to access in the metropolitan city of Tokyo. In our survey, the respondents were asked about the place they bought the fresh fruits. As shown in Figure 2 and Table 3, we found that majority of Tokyo consumer from different background bought fresh fruits from supermarket.

Figure 2. Place to buy fresh fruits



Source: Self-survey

Table 3. Cross analysis for the place to buy fresh fruits

Demographic	Classification	Total Respondents	Significance Level	Supermarket (%)	Convenient Store (%)	Department Store (%)	Gift (%)	Others (%)	Two of these places (%)	Three of these places (%)
Gender	Male	50	10%	66.0	2.0	6.0	10.0	0.0	10.0	6.0
	Female	21		47.6	0.0	9.5	14.3	4.8	19.0	4.8
Age	Young (Less than 26)	30	1%	63.3	3.3	0.0	16.7	0.0	10.0	6.7
	Adult (26 to 50)	28		64.3	0.0	17.9	10.7	0.0	7.1	0.0
	Senior (More than 50)	13		46.2	0.0	0.0	0.0	7.7	30.8	15.4
Occupation	Student	29	10%	72.4	3.4	3.4	6.9	0.0	10.3	3.4
	Work	39		51.3	0.0	10.3	12.8	2.6	15.4	7.7
	Others	3		66.7	0.0	0.0	33.3	0.0	0.0	0.0
Annual Income (yen)	Lower (Less than 1.8 million)	37	10%	64.9	2.7	5.4	8.1	0.0	13.5	5.4
	Middle (1.8 to 3.6 million)	24		50.0	0.0	8.3	20.8	4.2	4.2	8.4
	Higher (More than 3.6 million)	10		70.0	0.0	10.0	0.0	0.0	20.0	0.0
Number per household	1 to 2	49	5%	63.3	2.0	4.1	14.3	2.0	10.2	4.0
	3 to 4	15		40.0	0.0	20.0	6.7	0.0	26.7	6.7
	More than 4	7		85.7	0.0	0.0	0.0	0.0	0.0	14.3
Frequency	Number of respondents	71		43	1	6	8	1	9	4

Source: Self-survey

Fruits for gifts are very famous in the Japanese society especially during summer seasons. The highest percentage of respondents who received the fresh fruits as a gift is those who are male, young generation, working, middle income group and less than 2 persons per household. This finding is agreeable with the research done by Gehrt *et al.* (1988) that old generation people usually send the fruits to their children and the trend of business people to

send the fruits as a gift to their business counterpart.

iii. Reasons for fresh fruits selection

There are several reasons why a person chose to eats fresh fruits as listed in Table 4. Table 4 shows the taste becomes main reason for the respondents to choose tropical fresh fruits over local fresh fruits (39.4%). However, most of respondents believe that local fresh fruits are more tasty (39.4%), much cheaper (33.8%), easy access (35.2%) and higher quality (15.5%). Comparing between fresh fruits and fruits juices, most of the respondents think that fruit juices are much easier to take (36.6%). On the other hand, most consumers think that fresh fruits are more tasty (46.5%), cheaper (16.5%), and more nutritious (18.3%) as compare to fruit juices. By far, total responses to these items indicate that the selection of fruits is very important issue for the Tokyo city residents.

Table 4. Reasons for fruits` selection

Preferences	Reason	Frequency	Percentage
		(person)	(%)
Prefer tropical fresh fruits more than local fruits	More tasty	28	39.4
	New taste	9	12.7
	Easy access	6	8.5
	High quality	3	4.2
Prefer local fresh fruits more than tropical fresh fruits	More tasty	28	39.4
	Cheaper	24	33.8
	Easy access	25	35.2
	High quality	11	15.5
than fresh fruits	More tasty	12	16.9
	More cheaper	11	15.5
	More nutritious	7	9.9
Prefer fresh fruits more than fruits juices	Easy to take	18	25.4
	More tasty	33	46.5
	More cheaper	12	16.9
	More nutritious	13	18.3

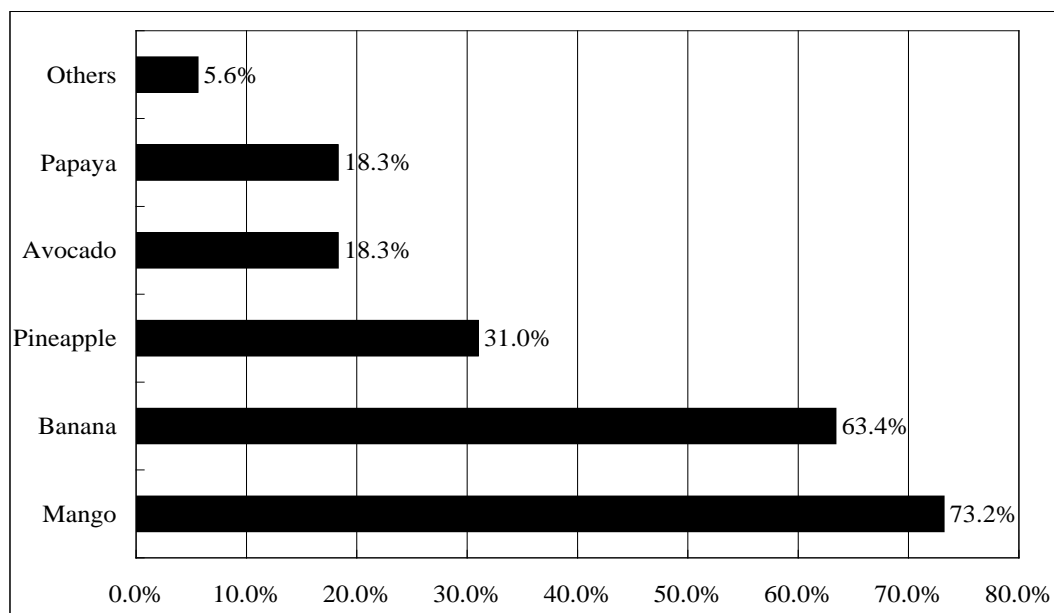
Source: Self-survey

iv. Familiarity to tropical fresh fruits

The fresh fruits consumption survey also concern about the familiarity of imported tropical fresh fruit among the consumers. We believe that Tokyo city consumers have modern lifestyles and easy to accept a new taste of agricultural products as well as easy to access to the imported product such as tropical fresh fruits.

According to Figure 3, 73.2% of the respondents have ever tasted mangos, followed by 63.4% for bananas, 31% for pineapples, 18.3% for both avocados and papayas, and 5.6% for other tropical fresh fruits such as durians (2 respondents), jackfruits (1 respondent) and star fruits (1 respondent). According to Table 5, majority of respondents are familiar with mangos and bananas. Adult and working people familiar more with pineapples while avocados are more popular among lower and middle class income people. Papayas on the other hand more familiar among male, young, lower class income and student. There are only small percentages of respondents familiar with other fruits.

Figure 3. Type of familiar tropical fresh fruits



Source: Self-survey

Table 5. Cross analysis for the type of familiar tropical fresh fruits

Demographic	Classification	Total		Mango		Banana		Pineapple		Avocado		Papaya		Others	
		Res.*	Freq**	%	Freq**	%	Freq**	%	Freq**	%	Freq**	%	Freq**	%	
Gender	Male	50	38	76.0	29	58.0	15	30.0	9	18.0	9	18.0	2	4.0	
	Female	21	14	66.7	16	35.6%	7	14.0	4	8.0	4	8.0	2	4.0	
Age	Young (Less than 26)	30	21	70.0	21	70.0	6	20.0	6	20.0	6	20.0	4	13.3	
	Adult (26 to 50)	28	20	71.4	16	57.1	9	32.1	3	10.7	4	14.3	0	0.0	
	Senior (More than 50)	13	11	84.6	8	61.5	7	53.8	4	30.8	3	23.1	0	0.0	
Occupation	Student	29	22	75.9	20	69.0	5	17.2	5	17.2	10	34.5	2	6.9	
	Work	39	28	71.8	25	64.1	17	43.6	8	20.5	3	7.7	0	0.0	
	Others	3	2	66.7	0	0.0	0	0.0	0	0.0	0	0.0	2	66.7	
Annual Income (yen)	Lower (Less than 1.8 million)	37	20	54.1	17	45.9	6	16.2	6	16.2	6	16.2	4	10.8	
	Middle (1.8 to 3.6 million)	24	20	83.3	20	83.3	9	37.5	4	16.7	3	12.5	0	0.0	
	Higher (More than 3.6 million)	10	10	100.0	8	80.0	7	70.0	3	30.0	4	40.0	0	0.0	
Number per household	1 to 2	49	34	69.4	35	71.4	13	26.5	8	16.3	10	20.4	3	6.1	
	3 to 4	15	14	93.3	7	46.7	9	60.0	4	26.7	2	13.3	1	6.7	
	More than 4	7	4	57.1	3	42.9	0	0.0	1	14.3	1	14.3	0	0.0	
Frequency	Number of respondents	71	52	100.0	45	100.0	22	100.0	13	100.0	13	100.0	4	100.0	

Notes: 1. Res* – respondents 2. Freq** - frequency

Source: Self-survey

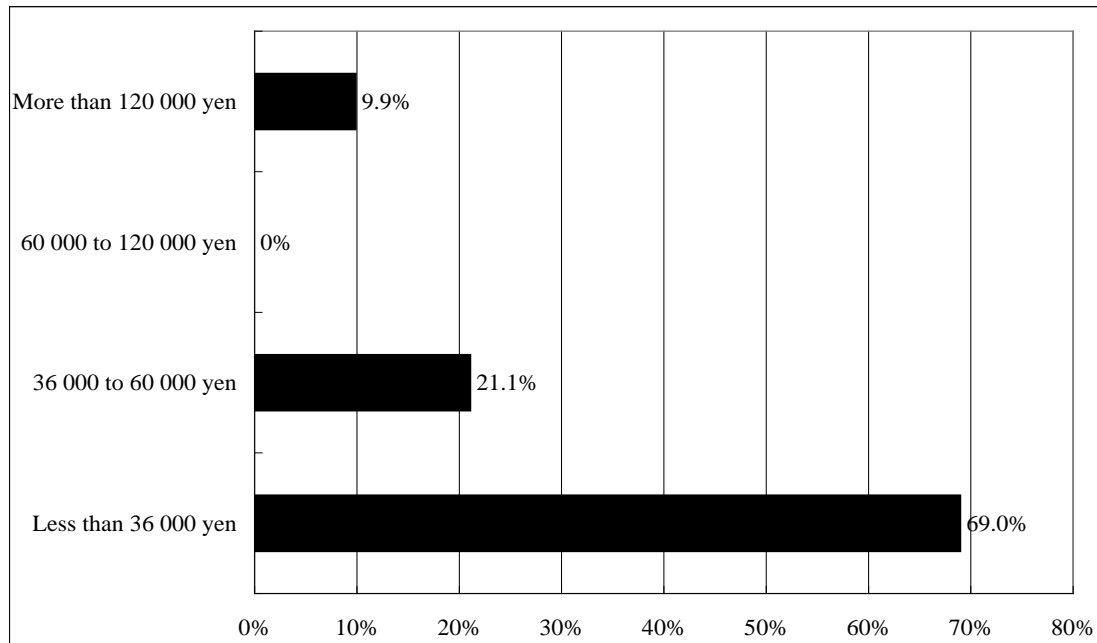
In general, our findings match our hypothesis that young generation prefers tropical fresh fruits more than the older generations. Most interesting findings is male are more familiar with tropical fresh fruits than the female except for other kind of tropical fresh fruits. This situation is maybe because male more 'brave' in testing new things and more 'social' than female.

b. Spending Behavior Analysis

i. Annual spending on fresh fruits

In general, majority of Tokyo consumers spend less than 36 000 yen annually for all three fruits categories (fresh fruits, tropical fresh fruits and fruits juices). Compared to those surveyed data, the standard national data indicates that from the total annual food consumption expenditures of 3.8 million yen, Tokyo city consumers spend at the average of 26 604 yen annually for fresh fruits, 11 416 yen for tropical fresh fruits and 8 586 yen for fruits and vegetables juices (Annual Report on FIES, 2008). Spending behavior analysis for Tokyo city consumer on fresh fruits were discuss based on four (4) different total annual spending categories as shown in Figure 4.

Figure 4. Annual spending on fresh fruits



Source: Self-survey

Table 6. Cross analysis for the annual spending on fresh fruits

Demographic	Classification	Total Respondents	Significance Level	<36 000 yen (%)	36 000 yen to 60 000 yen (%)	>120 000 yen (%)
Gender	Male	50	Not Significant	70.0	22.0	8.0
	Female	21		66.7	19.0	14.3
Age	Young (Less than 26)	30	1%	76.7	20.0	33.0
	Adult (26 to 50)	28		82.1	17.9	0.0
	Senior (More than 50)	13		23.1	30.8	46.2
Occupation	Student	29	10%	75.9	20.7	3.4
	Work	39		61.5	23.1	15.4
	Others	3		100.0	0.0	0.0
Annual Income (yen)	Lower (Less than 1.8 million)	37	5%	75.7	13.5	10.8
	Middle (1.8 to 3.6 million)	24		70.8	16.7	12.5
	Higher (More than 3.6 million)	10		40.0	60.0	0.0
Number per household	1 to 2	49	10%	75.5	14.3	10.2
	3 to 4	15		53.3	33.3	13.3
	More than 4	7		57.1	42.9	0.0
Frequency	Number of respondents	71		49	15	7

Source: Self-survey

Analysis of the Table 6 has shown that the respondents who spend less than 36 000 yen

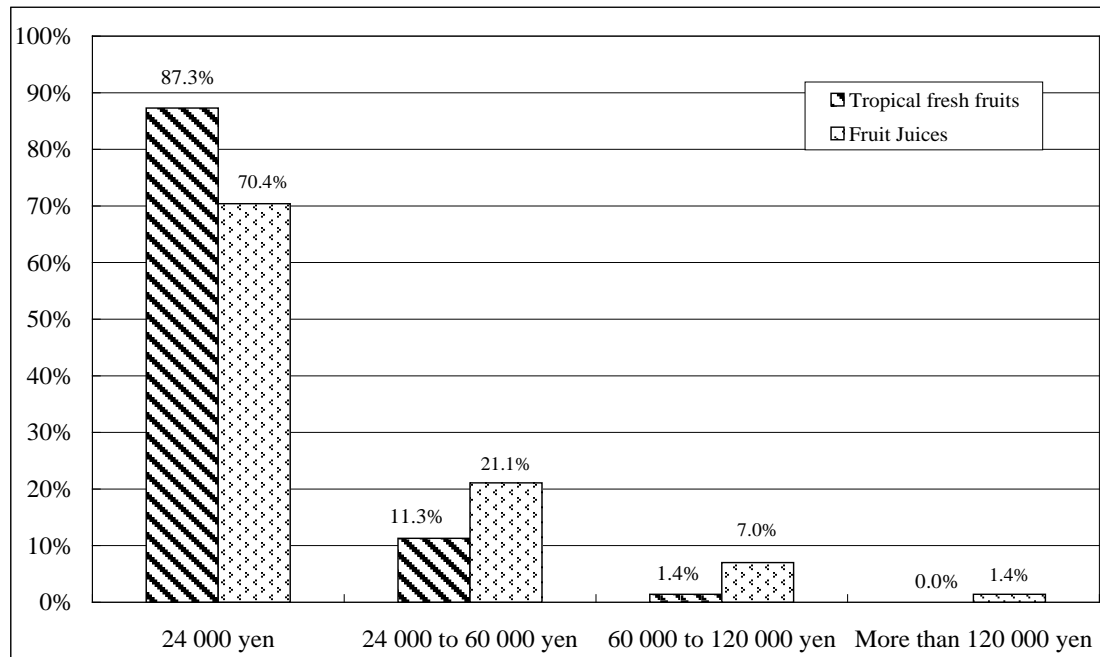
annually on the fresh fruits are the respondents from all categories. Male spend less than a female because male not willing to spend more time to search for a better quality of fruits, less health concern and usually willing to spend more on other fast food. Adult people spend less on fresh fruits because they have more important spending allocation such as for transportation, mortgages and children's' tuition fees.

Working people in Tokyo area who always in rush prefers fresh fruits especially for breakfast because fruits easy to carry and consume even though in train. Senior citizen spends more on fresh fruits not only to consume but also to send to their family and friends as a gift. On the other hand, high income people and the household with more than 4 members spend less on fresh fruit, which against our early hypothesis. High income people spend more on other luxury food as fresh fruits are normal good (Abdullah *et. al.*, 2009). Household with more family members spend less on fresh fruits because the expenditure are more variance such as expenses for health insurances, education fees and cloths.

ii. Annual spending on tropical fresh fruits and fruits juices

As for the tropical fresh fruits, 87.3% of consumers allocate portion of their expenditure on the commodity less than 36 000 yen annually, 11.3% for the spending between 36 000 yen to 60 000 yen, and 1.4% for 60 000 to 120 000 yen as shown in Figure 5. Figure 5 also shown that 70.4% of consumers spend less than 36 000 yen annually for fruits juices, 21.1% spend between 36 000 yen – 60 000 yen, 7% spend between 60 000 yen to 120 000 yen and 1.4% spend more than 120 000 yen.

Figure 5. Annual spending on tropical fresh fruits and fruit juices



Source: Self-survey

In average, entire respondents not willing to spend more than 24 000 yen for both tropical fresh fruits and fruit juices as shown in Table 7. Gender study reveals that male willing to spend more on tropical fresh fruits while both male and female have same altitude towards fruits juices. Male are more social than a female and usually tend to accept a new taste much faster than a female. Senior citizens spend more on tropical fresh fruits than any other categories of respondents but fruits juices are preferred by all ages. In Japan, usually senior citizens have more stable income. Therefore they have extra money to buy luxury items such as tropical fresh fruits. All class of occupations respondents' shares same spending altitude for both tropical fresh fruits and fruit juices. However, working people prefers juices more than others.

Table 7. Cross analysis for the annual spending on tropical fresh fruits and fruit juices

Demographic	Classification	Total Respondents	Significance Level	<24 000 yen		24 000 yen to 60 000 yen		60 000 yen to 120 000 yen		>120 000 yen
				Tropical (%)	Juices (%)	Tropical (%)	Juices (%)	Tropical (%)	Juices (%)	Tropical (%)
Gender	Male	50	F - 10%	90.0	72.0	8.0	22.0	2.0	4.0	0.0
	Female	21	J - N/S	81.0	66.7	19.0	19.0	0.0	14.3	0.0
Age	Young (Less than 26)	30	F - 10%	83.3	80.0	16.7	16.7	0.0	0.0	0.0
	Adult (26 to 50)	28	J - 1%	96.4	75.0	3.6	25.0	0.0	0.0	0.0
	Senior (More than 50)	13		76.9	38.5	15.4	23.1	7.7	38.5	0.0
Occupation	Student	29	F - 1%	89.7	82.8	10.3	13.8	0.0	0.0	0.0
	Work	39	J - 10%	87.2	59.0	12.8	28.2	0.0	12.8	0.0
	Others	3		66.7	100.0	0.0	0.0	33.3	0.0	0.0
Annual Income (yen)	Lower (Less than 1.8 million)	37	F - 10%	89.2	81.1	10.8	10.8	0.0	5.4	0.0
	Middle (1.8 to 3.6 million)	24	J - 10%	87.5	58.3	8.3	37.5	4.2	4.2	0.0
	Higher (More than 3.6 million)	10		80.0	80.0	20.0	20.0	0.0	20.0	0.0
Number per household	1 to 2	49	F - N/S	87.8	79.6	12.2	12.2	0.0	6.1	0.0
	3 to 4	15	J - 10%	86.7	66.7	6.7	26.7	6.7	6.7	0.0
	More than 4	7		85.7	14.3	14.3	71.4	0.0	14.3	0.0
Frequency	Number of respondents	71		62	50	8	15	1	5	0

Note : F - fruits, J - fruit juices, N/S - not significant.

Source: Self-survey

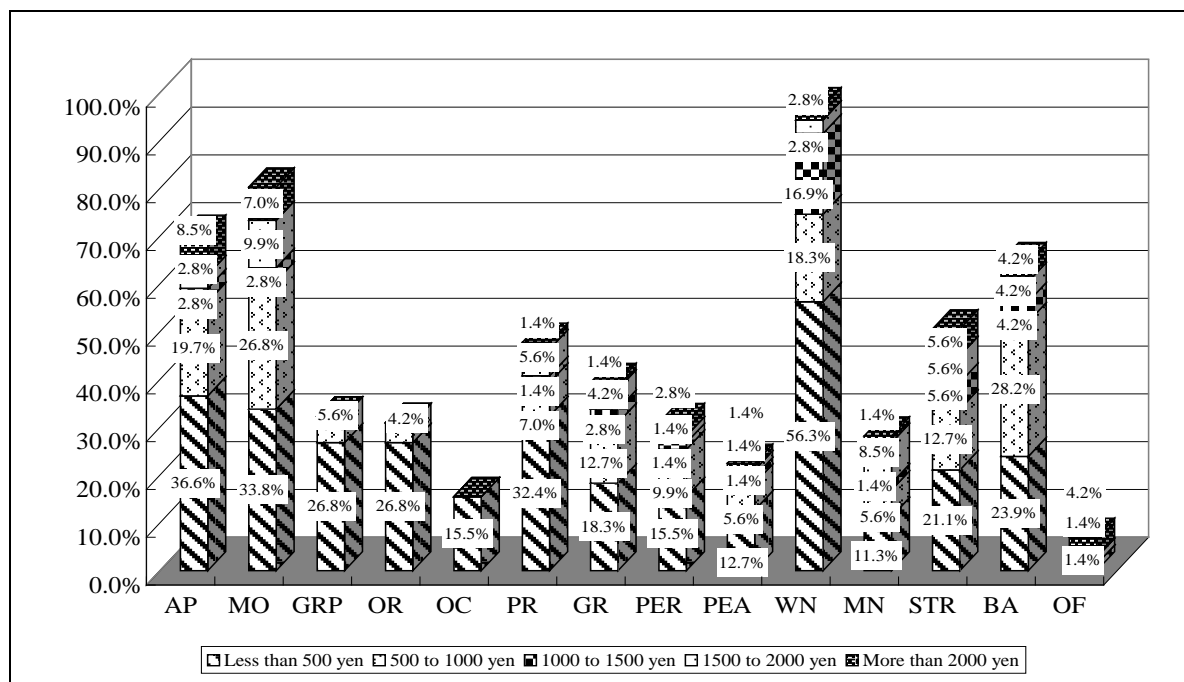
Working class people usually rush in time. Therefore they consume more juices especially for breakfast because fruits juices are cheaper, easier to take and the juice bar kiosk are available at most of the train station across Yamanote Line. Lower income class respondents prefer fruit juices more than tropical fresh fruits while middle income class people willing to spend more on tropical fresh fruits. These scenarios are because fruit juices much cheaper than tropical fresh fruits and working people capable of buying tropical fresh fruits as they have stable income. On the other hand, there are no differences between spending behavior for tropical fresh fruits among the household size.

Household with more than 4 persons spend more on fruits juices than other group of respondents. Household with more family member have to limit their budget on fruits expenditure because they need to spend more on other important matters such as other necessity food like cereals, fish and meats as well as other household expenses like health insurance and utility bills.

c. Preferred Fresh Fruits

Figure 6 represent the Tokyo city's annual spending behavior on 14 different types of common fresh fruits in the market namely apple, mandarin orange, grapefruits, orange, other citrus, pear, grape, persimmon, peach, watermelon, melon, strawberry, banana and other fruits.

Figure 6. Tokyo consumers spending on fresh fruits



Note : AP – apple, MO – mandarin orange, GRP – grapefruits, OR – Orange, OC – other citrus, PR – pear, GR – grape, PER – persimmon, PEA – peach, WN – watermelon, MN – melon, STR – strawberry, BA – banana, OF – other fruits.

Source: Self-survey

Higher percentage of respondents spends at the average of less than 500 yen annually on all types of fruits except for banana. As for banana, 23.9% of consumers spend less than 500 yen but 28.2% of the consumer willing to spend between 500-1000 yen annually. Our previous study found that other citrus, grape, persimmon, banana watermelon and strawberry considered as luxury in Ku Areas of Tokyo (Abdullah *et al.*, 2009 and Alias *et al.*, 2011). However, in this study, we found that most of Tokyo city consumers willing to spend more on watermelons followed by mandarin oranges, apples, bananas, strawberries, pears, grapes, grapefruits, persimmons, oranges, melons, peaches, other citrus and other fruits.

According to our survey, watermelon is the most popular fresh fruits among Tokyo consumer. This kind of information might be useful information to watermelon's producer prefectures such as Tottori and Kumamoto. As reported by Mori *et al.* (1988), the production and consumption for other citrus for the whole Japan has been decline; our study also shows that the demand for other citrus placed at the second last among other 13 fresh fruits. However, mandarin orange ranked at 2 which parallel with the increase in import of this fresh fruits especially from the United States but not agreeable with the study by Mori *et al.* (1988).

DISCUSSION

The Tokyo City Fresh Fruits Consumption Survey provides a snapshot of fresh fruits consumption related problems or concerns, consumption behaviors, and the spending behavior on fresh fruits as perceived by survey respondents. Most of the findings in this study tally with our early hypotheses which are; Tokyo residents think that fruits are important for health, female consume fruits more frequent than a male, younger generation eats fruits more than the older, and older generations consume more fruit juices. However, our findings mislead our hypothesis as we found that high income people and the household with more than 4 members spend less on fresh fruit.

Most of the respondents bought the fresh fruits from the supermarket. It is because supermarkets available everywhere in Tokyo. Supermarket also offers wide variety of fresh fruits at reasonable price. Young generation received more fresh fruits as a gift than the adult and older generation. Usually, adult and older generation either from Tokyo or other places sends the gift to their children with the belief that fresh fruits are too much expensive in Tokyo and their children needs to allocate the money into something much important such as other food, transportation and apartment rent.

In general, Tokyo residents prefer local fresh fruits more than tropical fresh fruits due to several reasons such as more tasty, cheaper, easy to get and better quality. On the other hand, the respondents prefer more on fresh fruits compared to fruit juices. This findings contrast with our previous study on fresh fruits demand in Japan (Abdullah *et. al.*, 2009 and Alias *et al.*, 2011). As for total annual spending on fresh fruits, majority of Tokyo City residents spend less than 36 000 yen per year for fresh fruits and less than 24 000 yen annually for tropical fresh fruits and fruit juices. It is because of high living cost in Tokyo that makes the residents allocate their income on more important things such as apartment rent, transportation cost and health insurance. Among local fresh fruits, watermelon is the most popular fruit for Tokyo city residents. Banana and mango are famous tropical fresh fruits among respondents.

The findings from the survey give us some pictures about the fresh fruits consumption among Tokyo residents. With some interesting new findings, we believe further study should be carried out to gather more information which is very important in making structural marketing adjustment for fresh fruits especially in this region.

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