What factors influence people to eat organic vegetables in Bangkok and the Metropolitan Area?

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by

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Abstract

In Thailand, the trend on consumption of organic food has been increasing steadily in recent years, as a single digit growth, due to change in behavior of people. However, as little is known on consumers ' demand for organic vegetables in Bangkok. Thus, this study aims to investigate factors that impact purchasing decisions toward organic vegetables in Bangkok that not only help those who have interest in entering this market whether it is a good business to do or not but also help to better understand the organic market. The emphasis is on prominent motivating factors for purchasing organic vegetables include: demographic factors, price, quality, taste, accessibility, surrounding, individual characteristics of consumers on consumption and behavior. The data were collected through a survey conducted in the Bangkok metropolitan region in April 2020 with a representative sample of 476 Bangkok respondents. Consumer's purchasing intention is analyzed within two approaches of probit model and ordered probit model. The results of the study indicate that factors influencing consumers' buying decision toward organic vegetables are high school education level, willingness to pay and behavior of using other organic product lifestyles. Consumers with these variables are likely to buy organic vegetables. However, age and eating a normal food lifestyle decrease the probability of buying organic vegetables. It means that consumers with these characteristics are less likely to purchase organic vegetables.

Introduction

Health is considered as one of the trends nowadays. People start to care more about themselves and the environment. Being a healthy person can express in many ways from eating to activities in life. Many people have changed their diet to be healthier so they pay attention to the nutrients, ingredients, fats and so on but still many have incorrect understanding between a healthy and organic diet. Despite the world healthy trend, Thailand is still a starter. There are numerous barriers for people to consume organic food. With the literature review from many research papers, there are several factors to be considered which are price, quality, taste, accessibility, surrounding, lifestyle, demographic factors, and willingness to pay. These factors will later on in this paper be used as variables.

The main questions in this research paper is what factors impact the decision for people to buy or not buy organic vegetables with several aspects. We would like to find out factors that mentioned in the previous paragraph have significant effects on behavior of buying organic vegetables or not, to what extent that people willing to pay extra for organic vegetables, are there any correlation with a healthy lifestyle as well, and so on. The research gap is to find factors influencing organic vegetables in Bangkok and the Metropolitan area. Due to the fact that there are large numbers of research about organic food consumption but a small number of research is founded with the sample of Bangkok people and even with limited information in each research. Furthermore, researches focus mostly on organic food rather than specifically organic vegetables. The methodology that is used in this research paper is regression through probit and ordered probit model from online survey of 467 valid respondents. Moreover with accessibility aspects, researchers also do website research about the volume of places that sell organic vegetables in Bangkok and Metropolitan area. The results after all the analysis found that probit and ordered probit models have different significant factors. As in probit case, the positively significant variables are high school education level, other organic products purchase and willingness to pay. The negatively significant variables are age and normal food consumption. In the ordered probit case, significance varies along with the amount of organic vegetables per week. The significant variables are age, income range between 90,001 and 105,000 THB, junk food consumption, organic food consumption, normal food consumption, quality, taste, other organic product consumption, alcohol behavior, and willingness to pay.

In this research paper, the next section will be proposing a literature review about each related factor then followed by the section of theoretical frameworks to support a clearer view of this study. The next section is about the methodology including collecting data, source of data and statistical models. After all the method is being elaborated, the results will follow to show what we have found from the research. Lastly, conclusions of the research and limitations during the process will be discussed.

Literature Review

Price

Price plays a significant role in intention to buy organic food (Al-Swide et al., 2014; Padel and Foster, 2005). Even though this factor refers to a crucial decision for consumers' purchase behavior, price also depends on the customers whether they assign it in which role. For instance, pricing has an effect on food consumption. It follows that increased demand for healthy food and decreased consumption of unhealthy food (French et al., 1997; French, 2003). Price serves double roles in the market. In a negative role, price becomes the cost of consumers while in a positive role, it provides a signal of quality (Völckner and Hofmann 2007; Zeithaml 1988).

Several researchers stated that the price was a prominent barrier to purchase organic food (Aertsens et al.,2009 and Hughner et al.,2007). When price is the major perceived obstacle to purchase with limited budget, price sensitivity of organic consumers is relatively lower than price sensitivity of conventional food consumers (Aschemann-Witzel andZielke, 2015). Moreover, Padel and Midmore (2005) and O'Doherty Jensen, Denver, and Zanoli (2011) have addressed high prices are major constraints that hamper consumer demand for organic food. Premium price by comparison to conventional food is the most frequently mentioned barrier from consumers when they refer to organic food purchase. Jessica A. and Stephan Z. (2014) also found that the perception of organic food prices being high or expensive, price orientation (Zagata, 2012) or perceived importance of price for food shopping (Padilla Bravo et al., 2013) negatively influence frequency or self-reported or actual purchase. Roitner-Schobesberger et al. (2008) has shown that many organic vegetables have higher price compared with the price difference of organic and non-labeled conventional vegetables in Bangkok. Researchers also concluded that organic vegetables price is not likely to be a key factor hinder sales in Bangkok.

In terms of price sensitivity, Gabriela C. et. al, (2019) indicated that, by comparing with non-organic products, they, as well, mentioned that consumers who consume organic food represent as a niche segment, meaning they are less price-sensitive and require more loyalty than in the case of the conventional food segment. In contrast, Marija H. et. al, (2016) mentioned that the impact of price reductions on demand are expected to be important as price elasticity of organic food is a lot higher than for conventional food.

There is information asymmetry in the organic market. Consumers Purchase decision impeded by issue of lack of organic price knowledge. Higher income level consumers have a tendency to overestimate the price gap of organic versus conventional food (Aschemann-Witzel and Zielke, 2015).

Apart from its own price aspect, the price of substitution is being considered as well. Shepherd et. al, (2005), have mentioned that one of the barriers to eat healthy is the cheapness of fast food. However, Shepherd and other (2005) paper's methodology focus on the research among 11-16 years old people which is quite narrow. Same idea has been mentioned by Munt et. al, (2016)'s paper, whose focus is on young adults, the barrier is unhealthy food is relatively cheaper than healthy food. One interesting part from Munt et. al, (2016)'s paper is that the research focuses on gender discrepancy showing that men were less concerned and followed eating healthy than women.

Quality

Quality as the primary factor of consumers plays an important role in food choice that holds true in particular products (Galmarini, Symoneaux, Chollet, & Zamora, 2013). According to traditional theory of consumer demand, conventional alternatives are competitors of organic products in the market. Some consumers use conventional food as a substitute for organic food due to the higher price of organic food. Some researchers and Lancaster (1971) argued that traditional theory omits some essential aspect that is the intrinsic characteristics of a commodity. The characteristics of organic products may determine the difference between organic products and conventional alternatives. Thus, buyer's behavior and organic food choice can link Lancaster with Lancaster's (1966, 1971, 19991) with the concept of inherent characteristics of consumer goods.

From literature review from 2006 by Bonti-Ankomah and K Yiridoe, even though consumers recognize some characteristics of organic vegetables such as freshness, taste, and appearance which have impact on consumer preference, it's difficult for them to distinguish between organic and conventional products. These sensory characteristics alone may not be enough to influence customers' buying decisions and differentiate organic food from conventional food. Product's credence characteristic has an impact on perception of buyer's decision choice (Andersen and Philipsen 1998). The good example is that product labels known as quality signals help transform the credence characteristic to quality attributes of food products, enabling consumers to access the good (Bonti-Ankomah and K Yiridoe, 2006). It's uneasy to understand consumer behavior and perception since consumers may perceive the organic product's quality characteristic differently. With that organic product, it's not guaranteed by organic labels (Hoffmann and Wivstad, 2015).

In other sense, Bonti-Ankomah and K Yiridoe (2006) stated that motivating factors to purchase organic foods are attributed to health and food safety in the first place. Consumers might emphasize personal benefit as priorities rather than social benefit. Some studies indicated that health concern, environmental concern, sensory properties, food safety and ethical concerns influence the intention to

purchase organically grown product (Tregear et al., 1994; Chinnici et al., 2002; Magnusson et al., 2003; Baker et al., 2004; Lockie et al., 2004).

Taste

In general, taste is considered as one factor that influences their purchase decision. In Italy and Sweden, major motivation to purchase organic food is driven by taste. Roitner-Schobesberger et al. (2008) has shown that the reason to purchase organic products in Bangkok were because 'they have a better taste' which accounted for nearly 30% of response. The result consistent with other studies that emphasize on organic vegetables have better taste than conventionally grown vegetables in consumer's perspective (Fillion and Arazi, 2002; McEachern and McClean, 2002; Zhao et al., 2007). With respect to organic products, more than one study reports that products have better taste. There is some contrast in the report about the role of taste. consumers have difficulty to distinguish between the taste of organic and conventional alternatives (Jolly and Norris, 1991; Sparling et. al., 1992). Moreover, in Irish and US studies, it found that there were no significant taste differences between organic and non-organic fruits and vegetables (Hoffmann and Wivstad, 2015). In other words, several studies have shown evidence about organic products being perceived as more in healthy aspects rather than taste (Jonathan P. Schuldt and Mary Hannahan,2013).

Accessibility

Availability and accessibility can be accounted as one of the major problems for consumers to choose organic products.This problem can affect the decision of organic food purchasing (Aertsens *et al*., 2009; Zakowska-Biemans, 2011). According to Gabriela C. et. al, (2019), accessibility is an important factor for Romanian consumers when it comes to the purchasing process of organic food products, as the most appreciated place of purchase is considered as only directly from the producers and supermarkets. Similar ideas have been raised in Shepherd et. al, (2005)'s research paper as well with the statement supporting that the wider availability of healthy food while the difficulty of access to healthy food is a barrier. In Hawaii, there is another research of Amore et. al, (2019) through the method of focus group among college students. One of the results is that there are physical barriers. It includes access to shops, only limited choice of healthy food being offered at small retailers, and lacking of home delivery service which is highly essential for those with limited mobility. Access to shop problems can occur due to some people having difficulty traveling to supermarkets through both means of transport difficulty and high cost of transportation.

However, based on case study of Norwegian,Vitterso G. and Tangeland T. (2015) stated that even organic food is accessible, the purchasing frequency is relatively low (once a month) and besides that, a specific barrier is represented by the economic and political conflict of interests towards the transition to a sustainable consumption system.

While other paper have shown mostly shown one side of accessibility, Ayres and Midmore (2009) have shown both perspective within its paper stating that availability in the UK have increased which make organic food consumption feasible but also stating that some groups of people still struggle with food sourcing and some thinks that organic product in supermarket is for profit. Availability varied depending on the shopping location as sellers don't get affected if they choose to avoid organic food but for consumers' side, putting effort on food sourcing is not convenient for them.

Surrounding factor

These days, environmental protection has been a major concern for society. One of the supportive examples is by not consuming products containing fertilizer or chemicals due to the degradation of land for cultivation. As claimed by the study from P. Pomsanam, K. Napompech and S. Suwanmaneepong (2014), they also studied factors driving Thai consumers' intention to purchase organic foods. From the study, they discussed that consumers' desire for environmental protection is also a factor explaining organic food purchase decisions with respect to the suggestion that subjective norms influence organic purchase decisions. So the results implied that family, friends, important people outside the family and society stimulate organic purchase decisions among Thai consumers.

Lifestyle factor

Main motive and barriers for consuming organic food by Polish sample is to consume healthy food from Soroka and Wojciechowska-Solis (2019) paper which interestingly divide samples into 2 groups of people who are active in physical activity and those who are not to distinguish the effect from both groups. It is founded that there are differences between two groups such as reasons to buy organic food, barriers to buy organic food, types of purchased organic food and the frequency of buying. Reasons for the active group to buy organic food was because of the natural and less processed when compared with conventional food but for inactive groups the main reason is found to be taste qualities. People who are active in physical activities are more likely to buy organic food more frequently. Barriers are price and accessibility in general but specifically for inactive group's barriers are lack of trust in organic food and inability to distinguish from conventional food which has also been mentioned in Ayres and Midmore (2009) that lack of trust also constituted a cognitive barrier to organic consumption with reference to organic produce that was grown abroad, especially outside the EU.

While Soroka and Wojciechowska-Solis (2019) discuss in a way that physical lifestyle is the cause to purchase organic products, Jose and Koshy (2018) presented the results as that healthy lifestyle do not leads to eating organic food but positive attitude towards organic food products is the one that lead to healthy lifestyle. Still despite the claim, Jose and Koshy (2018) paper later on concludes that what actually motivates an individual to lead a healthy lifestyle is ascertained.

Combined with the demographics aspect, little interesting detail was found from a research paper called *Consumers' willingness to pay for organic products in Thailand* (Sriwaranun et. al, 2014). Even though the paper mainly discussed the willingness to pay factor, there are some details mentioned about the lifestyle of consumers. From its findings, "respondents with children, however, are less likely to pay a premium for organic products"

Willingness to pay

Aryal et. al, (2009) stated the reasons behind consumers' willingness to purchase are exogenous factors and consumer knowledge and awareness about the products. As the key to implementing a price premium, consumers must clearly differentiate the product with conventional products. Results from the survey have concluded that consumer's WTP are influenced by limited and erratic supply, high price and very limited access and information for the case of Kathmandu. Whereas in Owusu and Anifori (2013) analysis found that the influencers on paying premium for organic fruits and vegetables are differently by each type of products. Socioeconomic characteristics, product freshness and cleanness have positive effects on premium price for organic watermelon where product size has a negative influence for organic lettuce as there are more insect damage which are considered as negative in the market. Similarly insights have been shown in Sriwaranun et. al, (2014) paper as well. The research had investigated mainly consumers' willingness to pay a premium for organic products via questionnaire through retail stores in metropolitan Bangkok has shown that people willing to pay premiums for organics but to different degrees with different types of products. As an example from this paper is 88% premium for kale but only 51% for jasmine rice. The analysis has shown that people are willing to pay due to belief of good for health and quality characteristics of the products and also the environment. Also, interesting facts and data was founded from the paper's literature review. Not just people pay differently with different vegetables, but also differ by the countries, consumer segments, product types and consumer behavior. Results also showed that environmental concerns have a negative significant relationship with WTP.

Demographic factor

Other than having perceived factors and extrinsic factors affecting decision to consume organic products, demographic factors also considered as a crucial factor to determine whether age, education, income, or gender have impact on the decision to buy organic products or not. According to the paper

from Kinga N. and Csaba F. (2019), they also studied the important factors that might influence decision in organic food in which the focus group is located in Hungary and Romania. Based on the study, they concluded that, for Romanian, decisions mainly come from consumer perception in which it is indifferent to their education level. On the other hand, the result is reversed in the case of Hungarian where there is a positive relationship between higher education levels to organic acceptance due to the concern of health and environmental benefit. Besides education, income also has a significant impact on organic consumption where consumers with higher income tend to consume organic more frequently. Moreover, according to the gender, females were suggested to be organic food buyers since they are motivated by diet consumption patterns. To sum up, the result came out that organic buyers tend to be the one who are old, with children, and have higher education levels than non-buyers.

In addition, it appears that there are several researchers who mainly focus on analyzing demographic characteristics on behavior of consuming organic products. According to Rachael L. D. and Carolyn D. (2010), they focused on identifying demographic characteristics of households buying organic vegetables in the United States and the result suggested that households with a high education and income level are more likely to buy organic vegetables. However, the result from the age factor contrasts with the Hungary and Romania case where the older generation had more chances to buy organic vegetables. This paper stated that younger consumers less than 30 have higher chance to consume organic vegetables compared to individuals whose age over 30.

Theoretical Framework

Demand and supply framework may seem to be obvious in every case and so does this topic. Most of the papers about the organic products are about the demand side so our research would like to put more emphasis on the supply side than other research. Demand side of the topic is certainly about people's decision to buy organic vegetables. For the supply side, our group would like to test the accessibility and supply in the market whether one of the reasons for a high organic vegetable price is because of too low supply.

Elasticity of demand should be considered as well. This can be tested by willingness to pay from the survey. From literature review, we found that many researches emphasized price and accessibility. With the price aspect, we built up an assumption that willingness to pay along with income is the key to this particular factor. When income and price increases, will the willingness to pay differ? In which directions? Organic vegetables will be considered as normal good, luxurious good or inferior good is up to consumer responses from increase of their income and change in price of the products.

Theory of planned behavior or TPB is a theory about behind thoughts of people when they make a decision that has been planned beforehand. The intentions to perform behaviors are built up from attitudes toward the behavior, subjective norms, and perceived behavioral control. Attitude toward the behavior is built by one's own thought. In the purchasing case, it is about whether buying the object has a positive or negative impact on you. For organic vegetables buying decisions, people who buy regularly may be because they know the benefits from organic consumption and value them. For those who don't see the benefits or know the advantages but do not value them, it may result in no purchase. Therefore, one of the questions in the survey asks 'from these factors, how much does each factor influence your decision to eat vegetables?' to test whether the framework works out or not. Subjective norms are mainly about other people's thoughts and beliefs from people in your group, family, friends, society, society culture and norms, the belief about what is positively or negatively viewed. It is often the case when a person is about to buy something, she or he go arounds and asks people whether they should buy that thing or not. This is one of the reasons why surrounding is considered as one of the factors in our equation. Perceived behavioral control is about the ease to act that particular behavior. In many cases, people try out the object whether it is easy to handle or not for example, a smart phone. For organic vegetables purchasing, the way to handle the vegetable in order to use it for cooking or eating them raw as salad has no difference with normal vegetables so this aspect is considered as irrelevant for the analysis.

Methodology

This part explained the method of data collection and model used in the analysis. Starting with sources of collecting data, primary data was collected from questionnaires distributed through online surveys. As shown in table 1, the total response is 572 responses where 27 have been dropped due to the condition of not eating vegetables, 4 have also been dropped due to age limitation, and 74 have been dropped from not living in Bangkok Metropolitan Region. So the net response is equal to 467 responses. Moreover, in terms of accessibility, secondary data was also gathered, through online sources, to identify the density of purchasing channels for organic vegetables in Bangkok by providing the number of supermarkets in each district in Bangkok.

Since the main question in this paper is to find the impacts that do not make people shift behavior to consume organic vegetables by focusing mainly in Bangkok, the target respondents are people who generally not eat organic vegetables and those who eat it normally and both are mainly living in Bangkok. The questionnaire has been divided into 4 sections; (1) demographic information, (2) factors, scales based on respondent's perceived value, that might influencing the decision to buy and consume organic vegetables, (3) lifestyle factors according to respondent's consumption pattern and behavior scale based on frequency, and (4) willingness to pay of each respondent to identify how extra percentage they are

willing to pay compare to normal vegetables. The descriptions of variables in each section are summarized in the table.

Dependent Variables		Label	Variable Description
Y_e		eatorg	Decision to buy organic vegetables; buy = 1, otherwise = 0
Y_v		vegperwk	Percentage consumption of organic vegetables per week; consume 0% = 0, consume 1-25% = 1, consume 26-50% = 2, consume 51-75% = 3, consume 76-100% = 4
Independent Variables		Label	Variable Description
Demographic factors (D)	Age	age	Filling age of respondents
	Income	income1	Income range; below 15,000 = 1, otherwise = 0
		income2	Income range; 15,001-30,000 = 1, otherwise = 0
		income3	Income range; 30,001-45000 = 1, otherwise = 0
		income4	Income range; 45,001-60,000 = 1, otherwise = 0
		income5	Income range; 60,001-90,000 = 1, otherwise = 0
		income6	Income range; 90,001-105,000 = 1, otherwise = 0
		income7	Income range; above 105,000 = 1, otherwise = 0
	Education	educ_high	Education level; highschool = 1, otherwise = 0
		educ_bach	Education level; bachelor degree = 1, otherwise = 0
		educ_mast	Education level; master degree = 1, otherwise = 0
		educ_phd	Education level; doctoral degree = 1, otherwise = 0
	Gender	gen_female	Female = 1, otherwise = 0
		gen_male	Male = 1, otherwise = 0
		gen_others	Others = 1, otherwise = 0
Perceived factors	Price	price	Perceived price of organic vegetables range from lowest influence = 1 to highest influence = 5
	Quality	quality	Perceived quality of organic vegetables range from lowest influence = 1 to highest influence = 5
	Taste	taste	Perceived taste of organic vegetables range from lowest influence = 1 to highest influence = 5
	Surrounding	surrounding	Influence from friend and family range from lowest influence = 1 to highest influence = 5
	Accessibility	access	Purchasing channel of organic vegetables range from lowest influence = 1 to highest influence = 5
Lifestyle for consumption pattern (LC)	Healthy food	lc_healthy	Frequency of eating healthy food range from never = 1 to always = 5
	Organic food	lc_organic	Frequency of eating organic food range from never = 1 to always = 5
	Junk food	lc_junk	Frequency of eating junk food range from never = 1 to always = 5
	Vegan or Vegetarian food	lc_veg	Frequency of eating vegan or vegetarian food range from never = 1 to always = 5
	Normal food	lc_normal	Frequency of eating normal food range from never = 1 to always = 5
Lifestyle for behavior pattern (LB)	Exercise	lb_exer	Frequency of doing exercise range from never = 1 to always = 5
	Sleep more than 8 hours per day	lb_sleep	Frequency of sleeping more than 8 hours per day range from never = 1 to always =5
	Use other organic products	lb_orgprod	Frequency of using other organic products range from never = 1 to always = 5
	Drinking alcohol	lb_alcohol	Frequency of drinking alcohol range from never = 1 to always = 5
	Smoking	lb_smoke	Frequency of smoking range from nevern = 1 to always = 5
Willingness to pay (W)		wtp	Comparing extra percentage consumers willing to pay compare to normal vegetables; never consume = 0, equal price = 100, 25% more = 125, 50% more = 150, 75% more = 175, 100% more = 200 by listing the highest possible price

Table 1: Descriptive statistics of dependent variables and independent variables

To estimate the result, this paper analyzed by using a probit regression model and ordered probit regression model in which the primary data will be applied and analyzed by using StataMP software. For the probit model, the dependent variable (Y) will be qualitative, which is to find whether the mentioned factors included in the equation have a significant impact on the decision for people to buy or not to buy organic vegetables. For ordered probit models, the dependent variable will also be qualitative by finding

the impact of the mentioned variables to the density of percentage consumption of organic vegetables per week.

Probit regression model:

$$Pr(Y=e) = \beta_e D_{ei} + P_{ei} + Q_{ei} + A_{ei} + T_{ei} + S_{ei} + LC_{ei} + LB_{ei} + \rho_e W_{ei} + \varepsilon$$
$$i=1,...,541 \qquad e=0,1$$

Where;

Y=e eatorg; whether individuals make the decision to buy or not to buy organic vegetables. Pr is the probability that $Y_e = 1$ if individuals buy or consume organic vegetables and $Y_e = 0$ if individuals don't buy or consume organic vegetables. Y_e is being found by the variable vegperwk where $Y_e = 0$ when vegperwk = 0 and $Y_e = 1$ when vegpercentperwk = 1, 2, and 3. D_{ei} is a vector of demographic variables including age and dummy for income, education, and gender. $P_{ei,}$ $Q_{ei,}$ $A_{ei,}$ $T_{ei,}$ $S\text{-}_{ei}$ are vector of factors , scales between 1(least influence) – 5(most influence), that might influencing the decision, perceived by each person, to buy and consume organic vegetables which are Price, Quality, Accessibility, Taste, and Surrounding. LC_{ei} is a vector of lifestyle factors based on consumption pattern, scale between 1(never) – 5(always), on eating healthy food, organic food, junk food, vegan or vegetarian food, and normal food. LB_{ei} is a vector of lifestyle factors based on behavior, scale between 1(never) – 5(always), on doing exercise, using other organic products such as shampoo or soap, sleep more than 8 hours per day, drinking alcohol and smoking. W_{ei} is a vector of willingness to pay an individual to identify how extra percentage consumers willing to pay compared to normal vegetables range between 0%(equal to normal vegetable), 25% more, 50% more, 75% more, and 100% more (2 times the price of normal vegetable). The variables label in willingness to pay factor are as following; (1) 0 for not consuming organic vegetable even price is the same, (2) 100 for consuming organic vegetable if price is equal to normal vegetable, (3) 125 for still consuming organic vegetable even if price is 25% more than normal vegetable, (4) 150 for still consuming organic vegetable even if price is 50% more than normal vegetable, (5) 175 for still consuming organic vegetable even if price is 75% more than normal vegetable, and (6) 200 for still consuming organic vegetable even if price is 2 times more than normal vegetable.

The coefficient β_e shows the difference probability of demographic factors affecting decision. If the coefficient estimate is positive, this implies that the demographic factors have the higher probability of affecting the decision to buy organic vegetables, vice versa.

The coefficient δ_e shows the difference probability of perceived factors affecting decision. If the coefficient estimate is positive, this implies that the perceived factors have the higher probability of affecting the decision to buy organic vegetables, vice versa.

The coefficient γ_e shows the difference probability of overall lifestyle affecting decision. . If the coefficient estimate is positive, this implies that the lifestyle factors have the higher probability of affecting the decision to buy organic vegetables, vice versa.

The coefficient ρ_e shows the difference probability of willingness to pay factor affecting decision. If the coefficient estimate is positive, this implies that the willingness to pay factor has the higher probability of affecting the decision to buy organic vegetables, vice versa.

Ordered probit regression model:

$$Pr(Y=v) = \beta_v D_{vi} + P_{vi} + Q_{vi} + A_{vi} + T_{vi} + S_{vi} + LC_{vi} + LB_{vi} + \rho_{vi} W_{vi} + \varepsilon$$
$$i=1,...,541 \qquad v=0,...,4$$

Where;

Y=v; vegperwk shows density of organic consumption per week. Pr is the probability that identify percentage consumption of organic vegetables per week; consumer consume 0% per week ; vegperwk = 0, consume 1-25% per week ; vegperwk = 1, consume 26-50% per week; vegperwk = 2, consume 51-75% per week; vegperwk = 3, consume 76-100% per week; vegperwk = 4.

Results

According to the answers received from the survey, the statistical data of demographic information can be classified into 4 categories; Firstly, gender. According to the answer, 297 respondents are female which accounted for 55%, 238 people responded as male which accounted for 44%, and 6 people responded as other types which accounted for 1%. Secondly, for education level, only 0.3% are still in or graduated from primary school only, following with 1.8% from doctoral degree, 7.2% from high school, 19% from master degree, and lastly 71.7% from bachelor degree. Thirdly, age, it is being separated into 4 generations in which 12.8% are baby boomer generation, 33.6% are generation X, 16.8% are generation Y, and 36.8% are generation Z. Finally, for the income group, we also separated it into 3 groups and we found that out of 541 responses, 49.2% are in the low income group, 34.2% are in the middle income group, and 16.6% are in the high income group. For the accessibility channel, out of 541 answers, most people choose to purchase organic vegetable from place near their home where the majority chooses to buy at Tops, followed by buying directly from farm, royal projects and others, Tesco Lotus, Villa market, Gourmet and Home Fresh Mart, Foodland, and Lemon Farm respectively. In the following paragraph, the results of both probit and ordered probit model will be discussed in detail before conclusion is reached.

VARIABLE	OBSERVATION	MEAN	STD. DEV.	MIN	MAX
EATORG	467	0.9250535	0.2635873	0	1
VEGPERWEEK	467	1.674518	0.9247744	0	4
AGE	467	36.31478	13.87457	18	70
INCOME1	467	0.2826552	0.4507731	0	1
INCOME2	467	0.2226981	0.4165034	0	1
INCOME3	467	0.1327623	0.3396815	0	1
INCOME4	467	0.117773	0.3226848	0	1
INCOME5	467	0.0920771	0.2894448	0	1
INCOME6	467	0.0471092	0.2120996	0	1
INCOME7	467	0.1049251	0.3067855	0	1
EDUC_HIGH	467	0.0642398	0.2454426	0	1
EDUC_BACH	467	0.7237687	0.4476121	0	1
EDUC_MAST	467	0.1905782	0.3931783	0	1
EDUC_PHD	467	0.0214133	0.1449128	0	1
GEN_FEMALE	467	0.5717345	0.4953581	0	1
GEN_MALE	467	0.4175589	0.4936855	0	1
GEN_OTHERS	467	0.0107066	0.1030278	0	1
PRICE	467	4.092077	0.8222244	1	5
QUALITY	467	4.494647	0.6530493	1	5
TASTE	467	4.012848	0.8565863	1	5
SURROUNDING	467	3.411135	1.05743	1	5
ACCESS	467	4.038544	0.8731894	1	5
LC_HEALTHY	467	3.533191	0.7699222	1	5
LC_JUNK	467	3.4197	0.7966383	2	5
LC_VEG	467	2.366167	0.9199569	1	5
LC_ORGANIC	467	2.937901	0.760053	1	5
LC_NORMAL	467	4.456103	0.667855	2	5
LB_EXER	467	3.334047	1.002024	1	5
LB_ORGPROD	467	2.738758	1.021369	1	5
LB_SLEEP	467	3.368308	0.989918	1	5
LB_ALCOHOL	467	2.068522	1.018927	1	5
LB_SMOKE	467	1.449679	0.9601138	1	5
WTP	467	131.5846	21.24744	100	200

Table 2 : Summarize variables

For analysis of Specification 1 in table 3 , the table illustrates the marginal effect (standard deviation within parenthesis) using probit estimation. According to the results, there are four variables that have been found to be statistically significant at 5% level while one variable has been found to be statistically significant at 1% that is willingness to pay factor. For aspects of demographic factors, negative marginal effect of age indicates that higher age level decreases probability that Ye = 1 by 0.18. Surprisingly, the result refers to consumers with higher age are less likely to buy organic vegetables, whereas consumers with high school education level are more likely to buy organic vegetables. In this

case, the positive and statistically significant marginal effect for high school education level(educ_high) indicates that it's increased probability of Ye = 1 by 2.07%.

For aspects of lifestyle factors, the normal food variable (lc_normal) is statistically significant but has a negative marginal effect, indicating that eating a normal food lifestyle decreases probability of Ye = 1 by 2.22%. consumers with eating a normal food lifestyle are less likely to buy organic vegetables. On the contrary, marginal effect for variable organic product (lb_orgprod) is statistically and positive indicating that using other organic product lifestyle increases probability that Ye = 1 by 2.22%. It can conclude that consumers with behavior of using other organic product lifestyles are more likely to buy organic vegetables.

Finally, willingness to pay (wtp) is statistically significant at 1% level in determining probability to purchase organic vegetables. As we expected, the marginal effect of willingness to pay variable is positive, indicating that it increases probability that $Y_e = 1$ by 0.1%. The outcome can be interpreted that consumers with high willingness to pay are more likely to buy organic vegetables.

Table 3: Specification 1 using probit estimation showing marginal effects (standard error within parentheses)

	1
	eatorg
VARIABLES	mfx dydx
age	-0.0018**
	(0.0007)
educ_high	0.0207**
	(0.0089)
educ_bach	0.0265
	(0.0246)
gen_female	0.0728
	(0.0777)
gen_male	0.0421
	(0.0411)
income1	-0.1204
	(0.0969)
income2	-0.0862
	(0.0792)
income3	-0.0208
	(0.0453)
income4	-0.1165
	(0.1025)
income5	-0.0202
	(0.0466)
income6	-0.0058
	(0.0399)
lc_healthy	0.0055
	(0.0081)
lc_junk	-0.0106
	(0.0076)
lc_veg	0.0123
	(0.0079)
lc_organic	0.0127
	(0.0100)

	1
	eatorg
VARIABLES	mfx dydx
lc_normal	-0.0222**
	(0.0109)
price	-0.0007
	(0.0072)
quality	0.0128
	(0.0094)
taste	-0.0039
	(0.0067)
surrounding	0.006
	(0.0052)
access	-0.0017
	(0.0061)
lb_exer	-0.0043
	(0.0055)
lb_orgprod	0.0131**
	(0.0062)
lb_sleep	-0.0012
	(0.0054)
lb_alcohol	0.0055
	(0.0061)
lb_smoke	-0.0065
	(0.0065)
wtp	0.0010***
	(0.0004)
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

From the ordered probit model, the marginal effects and standard deviation in the parentheses is shown in table 3. For demographic factors, doctoral education (educ_phd), LGBT (gen_others) and income range above 105,000 THB per month (income7) have been omitted to decrease multicollinearity. We can see that age has a significant effect on the amount of organic vegetable consumption per week at different significant levels. For consuming 0%, 1-25%, 26-50%, 51-75% per week, the age has impact for 0.0014%, 0.0068%, 0.004% and 0.0039% respectively at 1% level of significant where consuming 76%-100% is significant as well but only 0.0003% at 5% level of significant. For income range, income6 or 90,001-105,000 THB per month salary has negative effect 0.0203% for those who do not consume any organic vegetable per week at 5% level of significant while having positive impact 0.054% at 1% level of significant.

Moving on to the lifestyle side, especially consumption has a lot of significance on organic vegetable consumption per week. The significant factors are junk food consumption lifestyle, organic food consumption lifestyle, normal food consumption lifestyle. The marginal effect of junk food consumption variable affects amount of purchasing organic vegetables per week significantly that a change in the value of junk food consumption variable from zero to one positively changed the probability of consuming organic vegetables by 1.16 percent with statistically significant at 5 percent significance level and positively higher probability of consuming '1-25%' for 5.51% as well. At the same time, junk food consumption also has a negative lower probability of consuming '26-50%' and '51-75%' for 3.24%, 3.17% respectively at 5 percent significance level. Lastly, with 10 percent significance level, the variable negative lower probability of consuming '76-100%' organic vegetables per week for 0.26%. Similar to normal food consumption that it is positive for those consumption of '0%' and '1-25%' for 1.24% and 5.89% respectively and negative decrease consumption of '26-50%', '51-75%' and '76-100%' for 3.47%, 3.39% and 0.27% respectively with 5 percent significance level except 0.27% that is at 10 percent significance level. Contrastly with organic food consumption lifestyle variable, it is negatively decrease the probability of consuming '0%' and '1-25%' for 4.7% and 22.36% respectively but have positive increase probability in higher amount of consumption at '26-50%', '51-75%', '76-100%' for 13.15%, 12.86% and 1.04% respectively with 5 percent significance level except 1.04% that is at 10 percent significance level. This can be implied that those who regularly consume organic at large amounts would likely consume less junk food and normal food consumption vice versa.

Following with lifestyle variables based on behavior ranged from lowest frequency to highest frequency, by using 1 unit more of other organic products such as shampoo or soap have negative effect to change in probability of consuming 0% and in between 1% to 25% of organic vegetables by 1.27% and 6.04% at 1% significance level. However, consuming in between 26% to 50% and 51% to 75%, the marginal effect of using other organic products has positive significant effect by 3.6% and 3.5%

respectively at 1% significance level. In addition to consumption in between 76% to 100%, the marginal effect of using other organic products also has a positive change in probability of density by 0.3% at 5% significance level. Then for drinking alcohol behavior, for consuming more alcohol products by 1 unit, the probability of consuming organic vegetables at 0% and at 1% to 25% is lowered by 1% and 4.8% respectively at 5% significance level. Yet, the marginal effect has a positive impact on the change in probability of density of consuming organic vegetables above 25%. For ranges between 26% to 50% and 51% to 75%, the marginal effect of drinking alcohol increases consumption of organic vegetables by 2.8% at 5% significance level and for consuming above 75% to 100%, it causes higher consumption by 0.22% at 10% significance level.

Then for the marginal effect of perceived factors, there are 2 variables that significantly impact the density of consumption in organic vegetables decided by consumers per week. Firstly, quality variable affects the decision of buying organic vegetables ranging from lowest influence to highest influence. The result shows that the marginal effect of quality is negatively change the probability of not consuming any organic vegetable and consuming below 25% per week by 1.81% and 8.59% at 1% significance level. On the other hand, for consuming more than 25% of organic vegetables per week, the marginal effect of quality now has positive significant impact. So by increasing quality by 1 unit, consumer will consume organic vegetables in between 25% to 50% per week by 5.05% and more than 50% to 75% per week by 4.94% at 1% significance level and also positively impact consumption of organic in between 76% to 100% per week by 0.4% at 5% significance level. Lastly, taste variable also significantly impact the density of consumption of organic vegetables ranging from lowest influence to highest influence. The result indicates that when the taste variable increases by 1 unit, the density of consuming organic food at 0% and at 1% to 25% is positively influenced by 1.42% and 6.77% respectively at 1% significance level. At the same time, by consuming more than 25%, the marginal effect of taste has a negative impact on change in probability of consumption density. For consumption between 26% to 50% and 51% to 75% per week, the taste induced a decrease in probability all by 4% at 1% significance level. Moreover, the marginal effect from taste also affects the lower probability of consuming in between 76% to 100% per week at 0.3% at 5% significance level.

Finally, willingness to pay variable by comparing the percentage change in price of organic vegetables compared to normal vegetables. The result implies that the marginal effect of willingness to pay variable has positive impact to change probability of consuming at below 25% (0% by 0.05% and 1%-25% by 0.25%) at 1% significant level but has negative impact to density of consuming above 25% in which the range between consuming 26% to 50% per week and 51% to 75% per week is equally increased by 0.14% at 1% significance level and range above 75% per week is increased by 0.01% at 5% significance level.

Table 4: Specification 2 using ordered probit estimation showing marginal effects (standard error within parentheses)

	0	1	2	3	4
	vegperwk	vegperwk	vegperwk	vegperwk	vegperwk
VARIABLES	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
age	0.0014***	0.0068***	-0.0040***	-0.0039***	-0.0003**
	(0.0005)	(0.0019)	(0.0012)	(0.0011)	(0.0001)
educ_high	0.0393	0.1228	-0.095	-0.063	-0.0041
	(0.0545)	(0.1111)	(0.1110)	(0.0521)	(0.0030)
educ_bach	0.0209	0.1143	-0.058	-0.0705	-0.0066
	(0.0197)	(0.1202)	(0.0514)	(0.0801)	(0.0089)
educ_mast	0.0503	0.1593*	-0.1205	-0.0833*	-0.0057
	(0.0467)	(0.0962)	(0.0923)	(0.0478)	(0.0035)
gen_female	0.022	0.1081	-0.0608	-0.0638	-0.0055
	(0.0343)	(0.1684)	(0.0902)	(0.1031)	(0.0097)
gen_male	0.0499	0.1983	-0.126	-0.1129	-0.0093
	(0.0493)	(0.1527)	(0.1045)	(0.0898)	(0.0087)
income1	0.0095	0.0424	-0.0262	-0.0239	-0.0019
	(0.0206)	(0.0858)	(0.0555)	(0.0474)	(0.0036)
income2	-0.0025	-0.0122	0.007	0.0071	0.0006
	(0.0162)	(0.0803)	(0.0456)	(0.0470)	(0.0039)
income3	-0.0074	-0.0383	0.0209	0.0228	0.002
	(0.0140)	(0.0790)	(0.0397)	(0.0488)	(0.0046)
income4	-0.0006	-0.0031	0.0018	0.0018	0.0001
	(0.0160)	(0.0774)	(0.0450)	(0.0448)	(0.0037)
income5	-0.0169	-0.1026	0.0470*	0.0659	0.0066
	(0.0109)	(0.0810)	(0.0272)	(0.0582)	(0.0074)
income6	-0.0203**	-0.1383	0.0540***	0.0941	0.0106
	(0.0101)	(0.0933)	(0.0192)	(0.0750)	(0.0116)
lc_healthy	-0.0051	-0.0245	0.0144	0.0141	0.0011
	(0.0063)	(0.0299)	(0.0177)	(0.0172)	(0.0015)
lc_junk	0.0116**	0.0551**	-0.0324**	-0.0317**	-0.0026*
	(0.0055)	(0.0246)	(0.0149)	(0.0142)	(0.0015)
lc_veg	-0.0018	-0.0086	0.0051	0.005	0.0004
	(0.0049)	(0.0234)	(0.0138)	(0.0135)	(0.0011)

	0	1	2	3	4
	vegperwk	vegperwk	vegperwk	vegperwk	vegperwk
VARIABLES	mfx dydx	mfx dydx	mfx dydx	mfx dydx	mfx dydx
lc_organic	-0.0470***	-0.2236***	0.1315***	0.1286***	0.0104**
	(0.0108)	(0.0354)	(0.0250)	(0.0217)	(0.0041)
lc_normal	0.0124**	0.0589**	-0.0347**	-0.0339**	-0.0027*
	(0.0062)	(0.0279)	(0.0168)	(0.0161)	(0.0017)
price	0.0041	0.0193	-0.0114	-0.0111	-0.0009
	(0.0048)	(0.0227)	(0.0134)	(0.0131)	(0.0011)
quality	-0.0181**	-0.0859***	0.0505***	0.0494***	0.0040**
	(0.0070)	(0.0304)	(0.0187)	(0.0177)	(0.0020)
taste	0.0142***	0.0677***	-0.0399***	-0.0390***	-0.0032**
	(0.0053)	(0.0226)	(0.0140)	(0.0132)	(0.0015)
surrounding	-0.0055	-0.0259	0.0153	0.0149	0.0012
	(0.0039)	(0.0181)	(0.0108)	(0.0104)	(0.0010)
access	0.0005	0.0025	-0.0014	-0.0014	-0.0001
	(0.0047)	(0.0224)	(0.0132)	(0.0129)	(0.0010)
lb_exer	0.001	0.0048	-0.0028	-0.0028	-0.0002
	(0.0039)	(0.0185)	(0.0109)	(0.0107)	(0.0009)
lb_orgprod	-0.0127***	-0.0604***	0.0355***	0.0347***	0.0028**
	(0.0045)	(0.0196)	(0.0121)	(0.0114)	(0.0014)
lb_sleep	-0.0029	-0.0139	0.0082	0.008	0.0007
	(0.0039)	(0.0183)	(0.0108)	(0.0105)	(0.0009)
lb_alcohol	-0.0101**	-0.0480**	0.0283**	0.0276**	0.0022*
	(0.0045)	(0.0199)	(0.0121)	(0.0115)	(0.0012)
lb_smoke	0.006	0.0285	-0.0168	-0.0164	-0.0013
	(0.0047)	(0.0218)	(0.0129)	(0.0126)	(0.0011)
wtp	-0.0005***	-0.0025***	0.0014***	0.0014***	0.0001**
	(0.0002)	(0.0009)	(0.0005)	(0.0005)	(0.0001)

Discussion and Conclusion

This section indicates conclusion after analyzing the result about the factors affecting decision to eat organic vegetables in Bangkok and Metropolitans area and density of consumption per week.

From the analysis of the result, it indicates that some demographic factors including age and education for high school level are significant to the decision of consuming organic vegetables where age variable has negative impact and high school level of education has positive impact. This result is in contrast with Kinga N. and Csaba F. in the 2019 paper where they presented that the organic buyers are the older one with higher education levels. As well, for the density of consuming organic vegetables, when age increases, people tend to consume less of the product implying a negative significant effect for consuming above 25% per week. Moreover, the lifestyle factor based on consumption of normal food also has a negative significant effect on the decision to consume organic vegetables. However, for the density of consuming decision, the factor of consuming normal food contained both positive and negative effects that varied between consuming below 25% and above 25% per week. At the same time, a lifestyle factor based on the behavior of consuming other organic products has positive significant impact toward decision but contains both positive and negative impact on density of consumption. In addition, the willingness to pay factor plays a major role in the decision to consume organic vegetables and density of consumption per week. By looking at the distinct factors that have significant effect only to density of consuming organic vegetables per week, income range above 105,000 baht, lifestyle factors based on consumption pattern of consuming junk food and organic food, quality and taste perceived by individuals, and lifestyle behavior of consuming alcohol products are all significant where age and junk food consumption factor are the only two that has positively impact to density of consuming below 25% of organic consumption per week, vice versa.

However, based on the research on case studies across countries, most of the researchers showed that price and accessibility are the main factors affecting the decision to buy organic vegetables. In this study the result implies that both price and accessibility factors are insignificant to the buying decision for consumers in Bangkok and Metropolitans area. This may occur due to the information asymmetry problem and limited knowledge about organic products.

In conclusion, in order to boost organic consumption compared to other developed countries, the supply channel in the organic market must be expanded since there is a numerous demand for organic vegetables across districts based on the survey but according to the accessibility channel of supplying organic products is still limited in some places. Moreover, Thailand should also raise concerns about environmental protection and health concerns by motivating organic farming which found on the Food

and Agriculture Organization (FOA) that it creates a huge amount of environmental benefits compared to normal farming by relying on chemical and fertilizer.

All in all, our group also suggested that for further research about this topic, we should also segment the target group of organic consumers to understand more about insight of the target group.

Limitations

As the situation of Coronavirus disease 2019 (COVID-19) continues to evolve, we faced a number of challenges during data collection. At first with the interest on the supply side, the researchers aim to do store visit in order to check the supply and the price comparison . It's hard to store visits and lack of data availability of organic food in supermarkets. The collection of data about availability in each supermarket may not be totally accurate due to limitation of online websites. For example, Tesco Lotus may claim that they sell organic vegetables but in reality that may be true with only some branches. As we do not have the opportunity to do store visits, the information accuracy of this part of research is probably not fully correct. Secondly, different supermarkets have different characteristics. There are many types of consumers buying organic vegetables which each individual may have different perception or even purchasing behavior or even channel to buy goods. For example, some groups of people may prefer Tesco Lotus towards Villa market where others don't. Furthermore, even with the same type of vegetables, the price may differ in different supermarket chains. Thirdly, survey results can be systematically biased such as age, gender and income. Lastly, the sample was restricted to a single geographic area in Bangkok due to time constraint in collecting data.

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Appendix

Appendix A: Questionnaire

แบบสอบถามเรื่องพฤติกรรมการกินอาหาร organic

แบบสำรวจนี้ใช้เป็นแบบสำรวจในวิชา EE489 สัมมนาเศรษฐศาสตร์พฤติกรรม ของนักศึกษาชั้นปีที่ 4 คณะเศรษฐศาสตร์ (หลักสูตรนานาชาติ) มหาวิทยาลัยธรรมศาสตร์ในเรื่องของการบริโภคผัก organic

คำตอบของท่าน ขอให้เป็นการตัดสินใจก่อนเกิดเหตุการณ์ covid-19
* Required

1. ท่านทานผักหรือไม่ (ผักทั่วไปไม่จำเป็นต้องเป็นผักออร์แกนิค) *

   Mark only one oval.

   - ◯ ทาน
   - ◯ ไม่ทาน

2. ปัจจัยต่างๆเหล่านี้มีผลมากน้อยอย่างไรต่อการเลือกซื้อผัก *

   Mark only one oval per row.

	มีผลมากที่สุด	มีผลมาก	มีผลปานกลาง	มีผลเล็กน้อย	ไม่มีผลเลย
ราคาสมกับคุณภาพ	◯	◯	◯	◯	◯
คุณภาพ (ตัวอย่างเช่น ความสด)	◯	◯	◯	◯	◯
รสชาติ	◯	◯	◯	◯	◯
คนรอบข้าง เช่น ครอบครัว เพื่อน	◯	◯	◯	◯	◯
ความสะดวกในการเดินทางไปยังสถานที่จำหน่ายสินค้า	◯	◯	◯	◯	◯

3. เมื่อพูดถึงอาหารorganic สิ่งใดที่คุณนึกถึงอะไรเป็นอันดับแรก *

   Mark only one oval.

   - ◯ อาหารที่มาจากธรรมชาติ ไม่มีสารเคมีเจือปน
   - ◯ การกินแต่ผัก ไม่กินเนื้อสัตว์
   - ◯ การกินอาหารให้ถูกหลักโภชนาการ
   - ◯ การกินน้ำตาลน้อย ไขมันน้อย

พฤติกรรมการกินอาหาร organic

ความหมายของอาหาร organic
อาหาร organic มักจะถูกเข้าใจผิดกับอาหารเพื่อสุขภาพ
อาหารเพื่อสุขภาพจะสนใจเรื่องแคลอรี่ น้ำตาล ไขมัน ว่ามีปริมาณมากน้อยเพียงใด
อาหาร organic จะไม่มีสารปนเปื้อน ไม่ว่าจะเป็นยาฆ่าแมลง หรือการตัดต่อพันธุกรรม

4. การกินส่วนใหญ่ของคุณเป็นอย่างไร *

Mark only one oval per row.

	เป็นประจำ	บ่อยครั้ง	บางครั้ง	น้อยครั้ง	ไม่เคยเลย
รับประทานอาหารไม่ค่อยมีประโยชน์ (junk food, ของหวาน, อาหารรสจัด, อาหารแช่แข็ง)	◯	◯	◯	◯	◯
รับประทานเพื่อสุขภาพ	◯	◯	◯	◯	◯
รับประทานอาหาร organic	◯	◯	◯	◯	◯
รับประทานเจ (vegan) หรือ มังสวิรัต (vegetarian)	◯	◯	◯	◯	◯
รับประทานอาหารทั่วไป	◯	◯	◯	◯	◯

5. คุณจะตัดสินใจซื้อผัก organic อยู่หรือไม่ ถ้าหากราคาของผัก organic เป็นดังต่อไปนี้ *

Mark only one oval per row.

	ซื้อ	ไม่ซื้อ
ราคาเทียบเท่ากับผักทั่วไป	◯	◯
ราคามากกว่า 25% ของผักทั่วไป	◯	◯
ราคามากกว่า 50% ของผักทั่วไป	◯	◯
ราคามากกว่า 75% ของผักทั่วไป	◯	◯
ราคาเป็น 2 เท่าของผักทั่วไป	◯	◯

6. ในบรรดาผักสดที่คุณซื้อมา มีorganic product กี่เปอร์เซ็นต์ออาทิตย์ *

Mark only one oval.

- ◯ 76-100%
- ◯ 51-75%
- ◯ 26-50%
- ◯ 1-25%
- ◯ 0%

7. เวลาต้องการกินผัก organic คุณหาซื้อมันจากที่ใด *

Check all that apply.

- [ ] ไม่ซื้อ
- [ ] Villa market
- [ ] Lemon farm
- [ ] Tops
- [ ] Gourmet
- [ ] Foodland
- [ ] Tesco Lotus
- [ ] ตลาดสด

Other: [ ] _____

8. คุณซื้อผัก organic จากที่ใดมากที่สุด

Mark only one oval.

- ◯ ใกล้บ้าน
- ◯ ใกล้ที่ทำงาน
- ◯ ใกล้สถานศึกษา

9. ท่านทำพฤติกรรมในข้อใดต่อไปนี้อีกบ้าง (ตอบทุกข้อที่ทำ) (บ่อยแค่ไหน) *

Mark only one oval per row.

	เป็นประจำ	บ่อยครั้ง	บางครั้ง	น้อยครั้ง	ไม่เคยเลย
ออกกำลังกาย	◯	◯	◯	◯	◯
ใช้ผลิตภัณฑ์ organic อื่นๆ (เช่น แชมพู)	◯	◯	◯	◯	◯
นอนอย่างน้อย 8 ชั่วโมง/วัน	◯	◯	◯	◯	◯
ดื่มสุรา	◯	◯	◯	◯	◯
สูบบุหรี่	◯	◯	◯	◯	◯

10. อะไรทำให้คุณเลือกทาน/ไม่ทานผัก organic

นอกเหนือจากปัจจัยด้านราคา คุณภาพ รสชาติ คนรอบข้าง ความสะดวกในการซื้อ

_____

_____

_____

_____

_____

ข้อมูลส่วนตัว

11. เพศ *

Mark only one oval.

- ◯ ชาย
- ◯ หญิง
- ◯ อื่นๆ

12. อายุ *

_____

13. ระดับการศึกษาสูงสุด *

Mark only one oval.

- ◯ ประถมศึกษาหรือต่ำกว่า
- ◯ มัธยมศึกษาหรือเทียบเท่า
- ◯ ปริญญาตรีหรือเทียบเท่า
- ◯ ปริญญาโทหรือเทียบเท่า
- ◯ ปริญญาเอกหรือเทียบเท่า

14. รายได้ต่อเดือน(บาท) *

Mark only one oval.

- ◯ ต่ำกว่า 15,000
- ◯ 15,000-30,000
- ◯ 30,001-45,000
- ◯ 45,001-60,000
- ◯ 60,001-90,000
- ◯ 90,001-105,000
- ◯ มากกว่า 105,000

15. ท่านอาศัยอยู่จังหวัดใด *

Mark only one oval.

- ◯ กรุงเทพ
- ◯ Other: _____

16. บ้านอยู่เขตไหน *

หากอยู่นอกจังหวัดกรุงเทพมหานคร กรุณาตอบอื่นๆ

Mark only one oval.

- เขตพระนคร
- เขตดุสิต
- เขตหนองจอก
- เขตบางรัก
- เขตบางเขน
- เขตบางกะปิ
- เขตปทุมวัน
- เขตป้อมปราบศัตรูพ่าย
- เขตพระโขนง
- เขตมีนบุรี
- เขตลาดกระบัง
- เขตยานนาวา
- เขตสัมพันธวงศ์
- เขตพญาไท
- เขตธนบุรี
- เขตบางกอกใหญ่
- เขตบางกอกน้อย
- เขตห้วยขวาง
- เขตคลองสาน
- เขตตลิ่งชัน
- เขตบางขุนเทียน
- เขตภาษีเจริญ
- เขตหนองแขม
- เขตราษฎร์บูรณะ
- เขตบางพลัด
- เขตดินแดง
- เขตบึงกุ่ม
- เขตสาธร
- เขตบางซื่อ
- เขตจตุจักร
- เขตบางคอแหลม
- เขตประเวศ
- เขตคลองเตย
- เขตสวนหลวง
- เขตจอมทอง
- เขตดอนเมือง
- เขตราชเทวี
- เขตลาดพร้าว
- เขตวัฒนา
- เขตบางแค
- เขตหลักสี่
- เขตสายไหม
- เขตคันนายาว
- เขตสะพานสูง
- เขตวังทองหลาง
- เขตทองสามวา
- เขตบางนา
- เขตทวีวัฒนา
- เขตทุ่งครุ
- เขตบางบอน
- อื่นๆ

17. สถานที่ทำงาน หรือสถาบันศึกษาอยู่เขตเดียวกับบ้านหรือไม่ *

Mark only one oval.

- อยู่เขตเดียวกัน (ข้ามข้อถัดไป)
- อยู่คนละเขต (โปรดตอบข้อถัดไป)

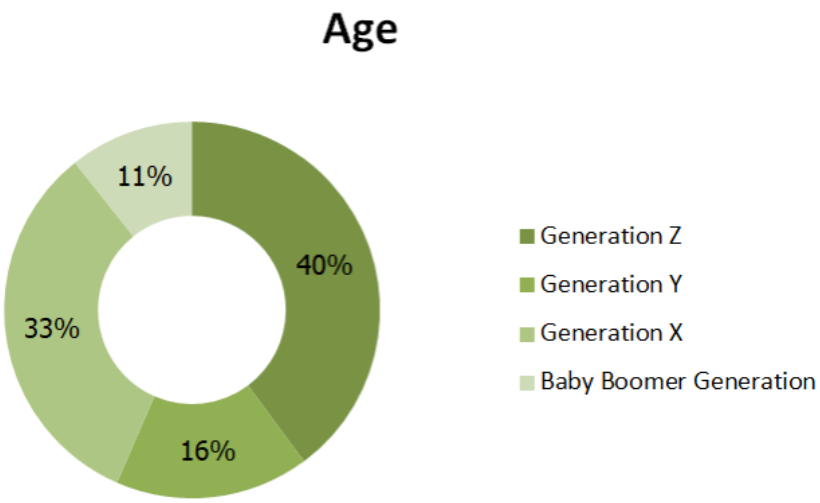
18. สถานที่ทำงานอยู่เขตไหน (หากเป็นนักศึกษาให้ตอบเขตของสถานศึกษา)

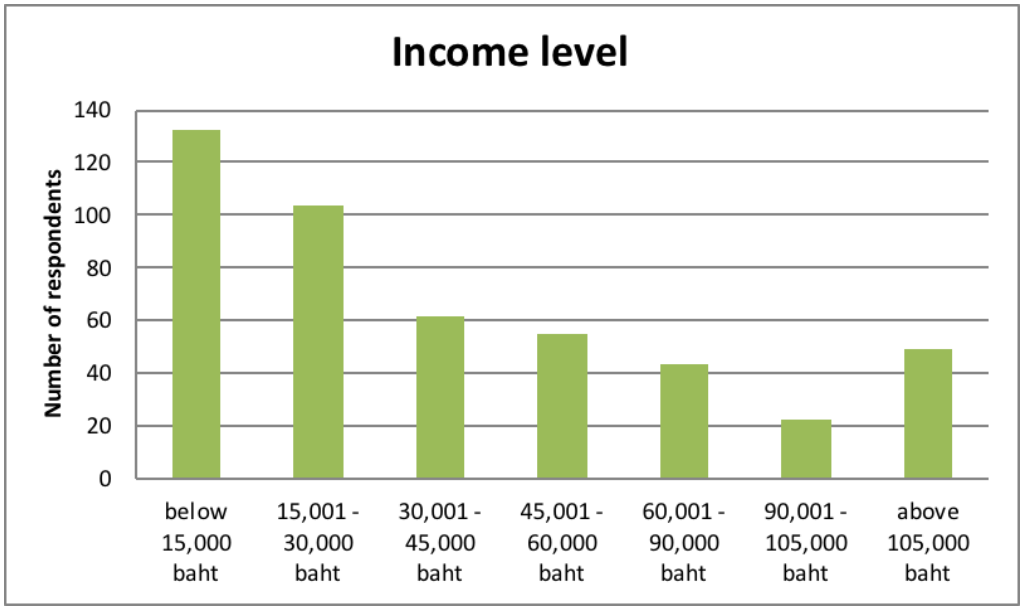
หากอยู่นอกจังหวัดกรุงเทพมหานคร กรุณาตอบอื่นๆ

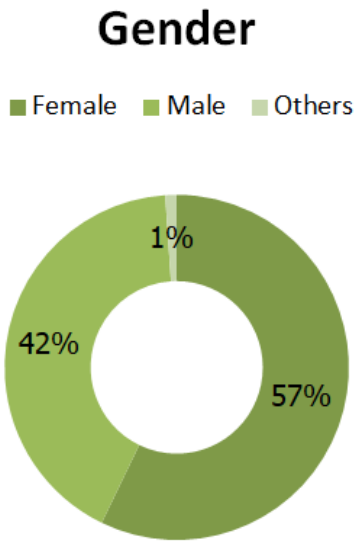
Mark only one oval.

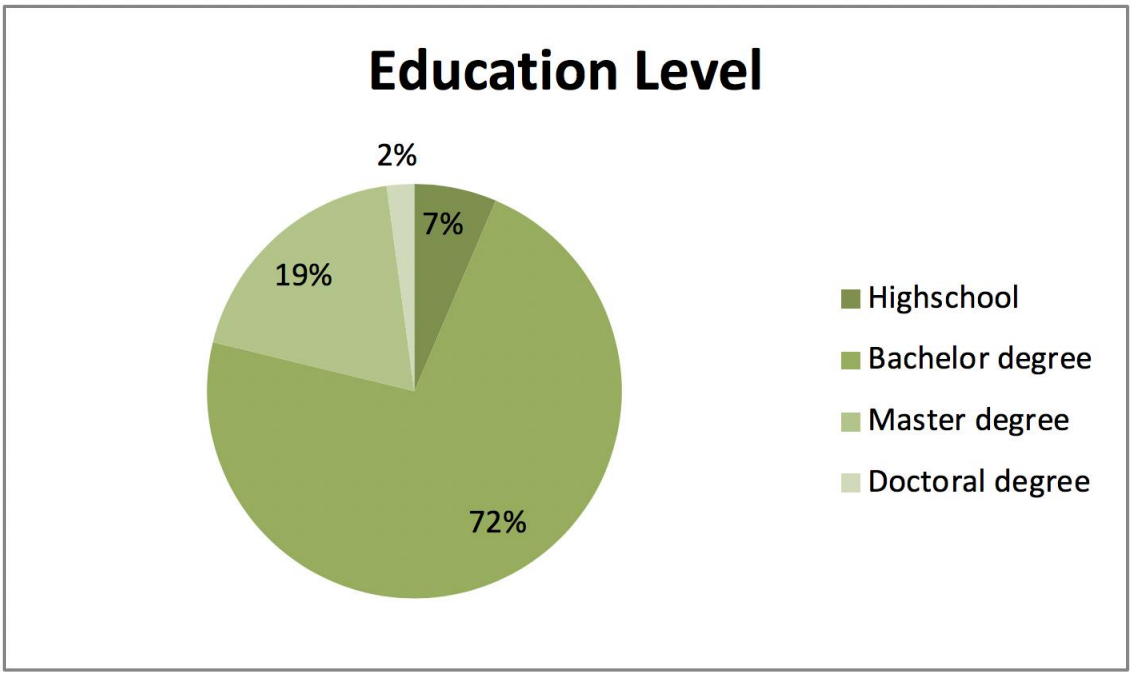
- เขตพระนคร
- เขตดุสิต
- เขตหนองจอก
- เขตบางรัก
- เขตบางเขน
- เขตบางกะปิ
- เขตปทุมวัน
- เขตป้อมปราบศัตรูพ่าย
- เขตพระโขนง
- เขตมีนบุรี
- เขตลาดกระบัง
- เขตยานนาวา
- เขตสัมพันธวงศ์
- เขตพญาไท
- เขตธนบุรี
- เขตบางกอกใหญ่
- เขตบางกอกน้อย
- เขตห้วยขวาง
- เขตคลองสาน
- เขตตลิ่งชัน
- เขตบางขุนเทียน
- เขตภาษีเจริญ
- เขตหนองแขม
- เขตราษฎร์บูรณะ
- เขตบางพลัด
- เขตดินแดง
- เขตบึงกุ่ม
- เขตสาธร
- เขตบางซื่อ
- เขตจตุจักร
- เขตบางคอแหลม
- เขตประเวศ
- เขตคลองเตย
- เขตสวนหลวง
- เขตจอมทอง
- เขตดอนเมือง
- เขตราชเทวี
- เขตลาดพร้าว
- เขตวัฒนา
- เขตบางแค
- เขตหลักสี่
- เขตสายไหม
- เขตคันนายาว
- เขตสะพานสูง
- เขตวังทองหลาง
- เขตทองสามวา
- เขตบางนา
- เขตทวีวัฒนา
- เขตทุ่งครุ
- เขตบางบอน
- อื่นๆ

Appendix B: Demographic result from the study






Gender
Female
Male
Others
1%
42%
57%


Education Level
2%
7%
19%
72%
Highschool
Bachelor degree
Master degree
Doctoral degree

Appendix C

Accessibility Table

Districts in Bangkok	Total shops	Districts in Bangkok	Total shop
Bang Bon	3	Lat Phrao	10
Bang Kapi	4	Min Buri	2
Bang Khae	5	Nong Chok	5
Bang Khen	10	Nong Khaem	1
Bang Kho Laem	0	Pathum Wan	12
Bang Khun Thian	2	Phasi Charoen	4
Bang Na	4	Phaya Thai	3
Bang Phlat	1	Phra Khanong	4
Bang Rak	7	Phra Nakhon	6
Bang Sue	3	Pom Prap Sattru Phai	0
Bangkok Noi	12	Prawet	6
Bangkok Yai	0	Rat Burana	1
Bueng Kum	3	Ratchathewi	5
Chatuchak	16	Sai Mai	2
Chom Thong	1	Samphanthawong	0
Din Daeng	5	Saphan Sung	5
Don Mueang	1	Sathon	5
Dusit	3	Suan Luang	8
Huai Khwang	4	Taling Chan	7
Khan Na Yao	6	Thawi Watthana	6
Khlong Sam Wa	1	Thon Buri	0
Khlong San	7	Thung Khru	1
Khlong Toei	9	Wang Thonglang	5
Lak Si	8	Watthana	19
Lat Krabang	5	Yan Nawa	5

Purchasing channel according to survey	Total responses
Tops*	304
Lemon Farm	65
Villa Market	136
Foodland	93
Gourmet and HomeFreshMart	127
Tesco Lotus**	153
Farms, Royal Projects, and others	197

*excluding Tops mini daily

**excluding Tesco Lotus express and Tesco Lotus Talad