AWARENESS, UNDERSTANDING & ATTITUDE TOWARDS BIODEGRADABLE PLASTIC AND HOW IT AFFECTS PURCHASE DECISION AND CORPORATE IMAGE

BY

MR. ROONGTHUMRUANG NUANGJAKCHIM

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE PROGRAM IN MARKETING
(INTERNATIONAL PROGRAM)
FACULTY OF COMMERCE AND ACCOUNTANCY
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ENTITLED

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AND CORPORATE IMAGE

was approved as partial fulfillment of the requirements for
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Chairman _____
(Professor Kenneth E. Miller, Ph.D.)

Member and Advisor _____
(Professor Paul G. Patterson, Ph.D.)

Dean _____
(Associate Professor Ruth Banomyong, Ph.D.)

Independent Study Title	AWARENESS, UNDERSTANDING & ATTITUDE TOWARDS BIODEGRADABLE PLASTIC AND HOW IT AFFECTS PURCHASE DECISION AND CORPORATE IMAGE
Author	Mr. Roongthumruang Nuangjakchim
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Major Field/Faculty/University	Faculty of Commerce and Accountancy Thammasat University
Independent Study Advisor	Professor Paul Patterson, Ph.D.
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ABSTRACT

Plastic waste is one of the world's critical environmental issues. More than ten tons of plastic are being produced every second worldwide and the number has been increasing every year. Approximately 37% of world plastic waste is currently not managed properly; they are being dumped and discarded into the environment causing harm to animals and humans (Trendsformative, 2019). Even in controlled landfills, the plastic waste leak is still a major concern, with more than three million tons of plastic waste is being leaked into the ocean (Nikkei Asian Review, 2018).

Yet there are plastic packaging that are produced from degradable plastic and biodegradable plastic. The two plastics are different in their raw material and features. Degradable plastic refers to traditional plastic in which chemical additives are added to allow the plastic to break down quicker than a traditional plastic usually would. It breaks down into smaller pieces of plastic called microplastic while biodegradable plastic refers to plastic made from plant-based materials like corn and wheat starch rather than petroleum. It decomposes naturally in the environment by microorganisms.

The level of awareness and understanding on the types of plastics among Thai consumers is still unknown. Moreover, the attitude & concerns towards biodegradable packaging is yet to be explored. To respond to this, this research aims to determine the objectives below.

- To identify the level of awareness of each of the types of plastic among Thai consumers
- To identify the level of understanding and perception of biodegradable plastic among Thai consumers
- To identify whether the understanding of types of plastic can affect the purchase intention for bottled water/ plastic coffee cups
- To identify attitude change towards companies/organization that use biodegradable plastic for their packaging
- To determine intended buyer profiles based on their intention on purchasing behavior for bottled water & coffee cups

This research was conducted using two marketing research designs: Exploratory and Descriptive. The methodology includes In-depth interviews and self-administered online surveys. The convenience sampling method was used for sampling selection. The target of this research is those male or female ages between 18-60 years old who purchase a bottle of water at least once a week or more often. The area of study was Greater Bangkok. 10 samples were conducted for In-Depth interviews and 228 completed questionnaires were collected for self-administered online survey.

The results of the research show that the majority of Thai consumers have the right understanding that 'biodegradable' plastics are "naturally break down by biological process" and "can decompose in nature" as its features. Moreover, 'Price' is also an attribute that highly mentioned for biodegradable plastic. Thai consumers perceived biodegradable plastic as to be more expensive than normal plastic; raising concerns for many that the price of the product might be increased due to the cost increase for manufacturers. Moreover, they were highly concerned about the disposal process of biodegradable plastic. They would like to know whether this type of plastic would need to be disposed of separately with other garbage or not for it to bio-decompose.

There were mainly 4 factors that influence a consumer in their purchase intention change towards purchasing a plastic bottled water or coffee cup if they are made from biodegradable plastic. The 4 factors are 'F1: Trust in benefit of Biodegradable plastic', 'F2: Willing to sacrifice', 'F3: Not my responsibility' and 'F4:

Active & curious'. Regression analysis showed that all factors except 'F3: Not my responsibility' have a positive influence on the purchase intention change.

Keywords: Plastic, Biodegradable plastic, Environmental issues

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Mr. Roongthumruang Nuangjakchim

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CHAPTER 1
INTRODUCTION

1.1 Introduction

In Thailand, there are numerous news and articles on global environmental issues including the topic of waste and its leakage into the sea. According to Nikkei Asian Review (2018), more than one million tons of plastic waste is being generated annually in Thailand and over 3% of the waste is leaked into the ocean. Poor waste management is being selected as one of the top 5 environmental concerns for Thais (Marketbuzzz, 2019). According to the Journal of Economics, with the raising concerns on environmental issues, nowadays consumers pay more attention to products on their environmentally and socially responsible (Yang, 2017). Consumers not only consider what features of the product would benefit themselves, but they are more aware of how the product will affect the environment after they are disposed (Zahid, et al.,2018).

With the rising momentum on green products, firms are increasingly introducing new green products that are environmentally sustainable (Olsen, et al., 2014). Attitude towards the brand is influenced by the introduction of new green products to the market (Olsen, et al., 2014). The large proportion that made up most packaging of a product is Plastic. In general, plastic is perceived negatively for Thais; it gives the image of harming the environment. This study mainly focuses on bottled water and coffee cup products which make up a large amount of plastic use in the market. In the market, there are alternative environment-friendly plastic materials such as biodegradable plastic, but the level of awareness and understanding in Thai consumers is still unknown.

This study aims to identify the level of awareness and understanding of the Biodegradable plastic among Thai consumers and understand their perception of Plastic and Biodegradable plastic. The study will also identify how environmentally friendly plastic packaging affects purchase intention and how they affect the corporate image that is providing the product.

With the focus on awareness, understanding & attitude towards biodegradable plastic and how it affects purchase decision and corporate image, this

study is under the area of marketing and societal issue regarding waste & pollution. The study explores different fields of marketing such as product design, communication, and consumer behavior.

'Theory of Planned Behavior' (Ajzen, 1991) was used in this study (see Appendix A). The theory was used in order to study the factors that influence customers' attitudes and purchase intentions. Factors influencing purchase intention was explored with this theory. The independent variables include demographics, attitudes, behaviors, and understanding of Biodegradable plastic. Following the model, attitudes towards taking actions to help with environmental issues are the subjective norm in the Theory of Planned Behavior. Behavioral Control would include demographics and behaviors. In this study, the dependent variable is the purchase intention change towards products made from biodegradable plastic instead of traditional plastic.

1.2 Objectives

This study focuses on 3 types of plastic which are 1.) Traditional plastic, 2.) Degradable plastic and 3.) Biodegradable plastic. The definitions of the terms are described below. For all respondents to have the same understanding, these terms were explained in the questionnaire.

“Traditional plastic” refers to a plastic that is made of polymers that do not break down to a natural, environmentally safe condition over time by biological processes. It usually takes hundreds of years to break down into smaller pieces.

“Degradable plastic” refers to traditional plastic in which chemical additives are added to allow the plastic to break down quicker than a standard plastic usually would. It breaks down into smaller pieces of plastic called microplastic.

“Biodegradable plastic” refers to plastic made from plant-based materials like corn and wheat starch rather than petroleum. It decomposes naturally in the environment by microorganisms.

In this study, we only focus on specific products that use plastic as their packaging which are bottled water and plastic coffee cups. Therefore, we have collected data from those who purchase bottled water or use service from coffee shops and use plastic coffee cups. In this study, we will refer to them as the “buyer”. “Buyer” refers

to people aged between 18-60 years old who have purchased bottled water or plastic coffee cups in the past 3 months with the frequency of at least once a week.

The objectives of this research are described below:

1. To identify the level of awareness of the type of plastic among Thai consumers

1.1. Awareness of Degradable plastic

1.2. Awareness of Biodegradable plastic

1.3. Awareness of the difference between degradable and biodegradable plastic

2. To identify the level of understanding and perception of biodegradable plastic of Thai consumers

2.1. Understanding of Biodegradable plastic features

2.2. Attitude & concerns towards using traditional Plastic and biodegradable plastic

2.2.1. Effects on oneself

2.2.2. Effects environment/ social at large

3. To identify whether the understanding of types of plastic can affect the purchase intention of bottled water/ plastic coffee cups

3.1. Purchase intention change towards bottled water/ coffee cups

3.2. An incremental price that they are willing to pay

4. To identify attitude change towards companies/organization that use biodegradable plastic for their packaging

4.1. Leading company/organization that are taking actions for the environmental

4.2. Attitude change towards company/organization if they use environmentally friendly biodegradable plastic.

5. To determine intended buyer profiles based on their intention on purchasing behavior for bottled water & coffee cups

5.1. To determine demographics by age, gender, maritage status, personal income, etc.

5.2. To determine living conditions which include types of housing (e.g. House, Condominium, Apartment, and Dormitory), household size, living condition dependency (e.g. living alone, family, spouse, roommate)

5.3. To determine their actions taken in consideration of saving the environment (using eco-bag, not using a plastic straw, not using plastic coffee cups, bringing their container to buy food, etc.)

CHAPTER 2
REVIEW OF LITERATURE

Plastic is becoming a world crisis as it can affect climate change and damage the ocean and ocean life because of the landfill leakage which currently happening. Over a million plastic bottles are purchased globally every 60 seconds and the number will increase by another 20% by 2021 (Laville, et al., 2017). The concern about waste is intense in Thailand as well. Thais produced over 27 million tons of garbage waste in 2018; approximately 20% are mainly from the Bangkok area (BLT Bangkok, 2019).

Producing environmentally friendly products and conduct green promotion have a positive impact on consumers' satisfaction (Kordshouli, et al., 2015). This study would like to explore on the corporate image from Thais consumer perspective towards company/brand that provides an environmentally friendly product such as using biodegradable plastic as product packaging.

Consumers' awareness of the corporation that is environmental friendliness also influences the behavior of consumers in adopting environmentally friendly products (Zahid, et al.,2018). The study also concluded that consumers expect the companies not to only produce green products but also to show responsibility to society on the topic of the environment.

The adoption of environmentally responsible behavior and their perception of green products are statistically significantly different from consumer generations (Dabija, 2017). The research also stated that Romanian and Sylvania consumers are willing to adapt their behavior to be more responsive to the environment because they want to give the next generations such as their child and grandchild a better living condition. In this study, we investigate whether Thai consumers have the same drive or not to adopt environmentally friendly behaviors.

The barrier of not purchasing an environmental-friendly product is that potential buyers have an issue in understanding usage and are concerned about the difficulty of using eco-friendly products and how it would be beneficial to the environment (Shim, et al., 2018). The study also mentioned that explaining how-to-use and how the product will be beneficial to the environment in detail could help increase the purchase intention of the green product.

A study on Chinese consumers concluded that consumers are skeptical about the price of green products and they are looking for the transparency of the price from companies. The price increase is still the main factor that prevents them from purchasing green products (Bhutto, et al., 2019). Regarding gender-wise, a study of consumers in the US stated that "consumers who engaged in green behavior were perceived by both male and female participants as more feminine than consumers who engaged in non-green behavior" (Brough, et al., 2016). However, it is just the perception towards the behavior.

Research on environmentally friendly packaging and Thai consumers is still limited. According to Wongnongtoeyan, Thai consumers pay more attention to green products because using green products give them a better image for them in others' view, however, the main barrier is still the higher price of the product that is environmentally friendly. The data found is There is still no quantitative study on the awareness and understanding of biodegradable plastic among Thai consumers nor the acceptable price increase that Thai consumers are willing to pay. This study contributes to these areas.

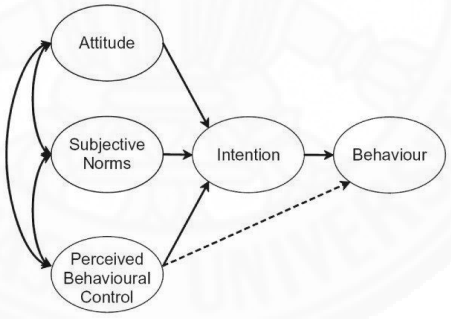

Figure 2.1 *Theory of planned behavior by Ajzen*

'Theory of Planned Behavior' (Ajzen, 1991) will be used as the guideline on data analysis of this research study. The theory predicts an individual's intention to engage in a behavior. The theory states that intention toward attitude, subjective norms, and perceived behavioral control, together shape an individual's behavioral intentions and behaviors. Following the model, perceived benefits of biodegradable plastic are considered as 'attitude' while actions taken to help with environmental issues are the 'subjective norm'. Behavioral Control includes demographics and behaviors. The dependent variable is the purchase intention change towards products made from

biodegradable plastic instead of traditional plastic. These factors will be explored whether they have an effect on the dependent variable or not.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

Methodology: There were two stages in this research which are listed below:

a) Exploratory Research - In-Depth-Interviews

b) Descriptive Research - Online Questionnaire (Self-administered survey)

The exploratory research comprises of 10 in-depth interviews. The data obtained gave a rough idea of the market situation and consumer insight. The data was analyzed and used in developing a questionnaire for the descriptive research stage. In the descriptive research stage, 228 convenience research samples in Greater Bangkok were given an online self-administered questionnaire. The data received was analyzed using the Statistical Package for the Social Science (SPSS) software.

Target Respondent

A. Male / Female Age 18-60 years old.

B. Those who reside in the Greater Bangkok area (GBKK). Greater Bangkok includes Bangkok, Nonthaburi, Pathum Thani, and Samut Prakan.

C. SES A-C (Household income of 18,001 or above) *According to TMRS (See table of SES in Bangkok 2018 in Appendix B)

D. Bottled water/Plastic coffee cups purchasers (have purchased in the past 3 months with the frequency of at least once a week).

E. Main decision-maker of the product

F. Make the actual purchase of the product by oneself

The study focuses on the target respondents that reside in Greater Bangkok (GBKK) area because the cities are top populated cities in Thailand ("Thailand Population 2019," 2019). Regarding the standardization of Socio-Economic Status (SES), people in class A-C C (18,000 THB and above) made up approximately 62% of the population in GBKK. This research, therefore, focuses on SES A-C considering the buying power of the consumers.

3.1 Exploratory Research

The exploratory research was conducted to understand the overall current market situation on products with plastic packaging. The understanding, attitude & concerns towards using traditional/biodegradable plastic were explored. Moreover, this phrase also has extracted attitude and image towards the company/brand that uses biodegradable plastic for its packaging. The qualitative data was further tested in a later stage of the research process.

Table 3.1

Exploratory Research Design

<table>
<tr><td>Methodology</td><td>In-depth Interview</td></tr>
<tr><td>Respondent Criteria</td><td>• Male / Female Age 18-60 years old.
• Those who reside in the Greater Bangkok area (GBKK).
• SES A-C (Household income of 18,001 or above)
• Bottled water /Plastic coffee cups users that have made purchases in the past 3 months with the frequency of at least once a week.
• Main decision-maker of the product.
• Make the actual purchase of the product by oneself.</td></tr>
<tr><td>Sample size</td><td>10 respondents</td></tr>
<tr><td>Quota</td><td><table><tr><td></td><td>Male</td><td>Female</td></tr><tr><td>18-35</td><td>3</td><td>3</td></tr><tr><td>35-49</td><td>2</td><td>2</td></tr></table>*Mixture of SES (A-C)</td></tr>
<tr><td>Sampling Method</td><td>Purposive recruitment (Convenience sampling)</td></tr>
<tr><td>LOI (Length of Interview)</td><td>Approximately 30 minutes per interview</td></tr>
<tr><td>Objectives</td><td>The in-depth interviews covered the below objectives:</td></tr>
</table>

	• To identify the level of understanding of biodegradable plastic of Thai consumers [Objective 2] • To understand the perception towards each type of Plastic (Traditional & Biodegradable plastic) [Objective 2] • To identify whether the understanding of types of plastic can affect the purchase intention of bottled water/ plastic coffee cups [Objective 3] • To identify attitude change towards companies/organization that use biodegradable plastic for their packaging [Objective 4] • To determine intended buyer profiles based on their intention on purchasing behavior for bottled water & coffee cups [Objective 5] Discussion guide for In-depth interview is listed in Appendix C.

3.2 Descriptive Research

A questionnaire was constructed to quantitatively verify assumptions, hypotheses, and evidence to explain the current market situation. 276 sets of online questionnaires were distributed. The completion rate of the questionnaire was 83%, resulting in a total of 228 completed surveys. All of those residing in the Greater Bangkok area. Survey questions consist mainly of closed-end questions (including yes-no, multiple choices, and scale questions) that allow participants to easily interpret and follow the survey. However, some open-end questions were also be added in certain areas and allow respondents to express their opinions beyond the defined scope of closed-end questions. The pre-test was conducted before the actual survey with 5 participants. The average time used to complete the survey is at 8 minutes.

Table 3.2

Descriptive Research Design

Methodology	Online Survey (Self-administered questionnaire)
Respondent Criteria	• Male / Female Age 18-60 years old. • Those who reside in the Greater Bangkok area (GBKK). • SES A-C (Household income of 18,001 or above) • Bottled water /Plastic coffee cups users that have made purchases in the past 3 months with the frequency of at least once a week. • Main decision-maker of the product. • Make the actual purchase of the product by oneself.
Sample size	228 samples
Sampling Method	Convenience sampling
LOI (Length of Interview)	Approximately 8-9 minutes survey
Objectives	The questionnaire covered the below objectives: • To identify the level of awareness of the type of plastic of Thai consumers [Objective 1] • To identify the level of understanding of biodegradable plastic of Thai consumers [Objective 2] • To understand the perception towards each type of Plastic (Traditional & Biodegradable plastic) [Objective 2] • To identify whether the understanding of types of plastic can affect the purchase intention of bottled water/ plastic coffee cups [Objective 3] • To identify attitude change towards companies/organization that use biodegradable plastic for their packaging [Objective 4] • To determine intended buyer profiles based on their intention on purchasing behavior for bottled water & coffee cups [Objective 5]

	Survey questions for the online questionnaire are listed in Appendix D.

3.3 Data Collection

Recruitment of in-depth-interview respondents was through personal connections and extended social circles via online social media platforms such as LINE, Facebook, WhatsApp, Facebook Messenger. All participants in the qualitative stage received a complimentary gift card (Starbucks card) valued at 100 THB and 5 participants out of 228 in the self-administrated online questionnaire were selected at random and received a complimentary gift card valued at 200 THB.

3.3.1 In-depth Interview

In-depth interview respondents were recruited through personal connections and extended social circle. A total of 12 respondents were recruited (2 people for pretest, 10 people for actual In-Depth-Interview). Each respondent had to pass a set of screening questions and qualified as a respondent who represents each of the target groups. The in-depth-interview took place at the respondent's convenience upon their request. Telephone interviews were conducted for those not convenient for a face-to-face interview.

3.3.2 Questionnaire (Online survey)

Survey Monkey is used as an online survey platform. Online questionnaires were distributed via a hyperlink and shared in online communities, including social media platforms (i.e. personal Facebook pages) and chat platforms (i.e. LINE group chats). The target respondents were from personal contacts and extended social circles who meet the selection criteria.

3.4 Data Analysis

Data analysis focuses on data obtained from in-depth interviews and online questionnaires. For the latter, prior to data analysis, quantitative data collected were

screened for errors and missing answers. Respondents with errors such as missing data were omitted from the analysis. All data analysis was conducted using the Statistical Package for the Social Science (SPSS) program. The analysis includes a comparison of frequencies, comparison of means, relationship between variables, correlation, factor analysis, and other appropriate statistical analyses.

CHAPTER 4
RESULTS AND DISCUSSION

4.1 Qualitative In-depth Interviews

10 In-depth interviews were conducted. The respondents were the mixture of both male and female; their age range from 22-45 (See Table 4.1 for respondent profile). All of them are those who purchase a bottled water or coffee that comes in plastic cups of frequency at least once a week or more. All respondents reside in Greater Bangkok area.

Table 4.1

Respondent Profile (In-depth Interviews)

No.	Gender	Age	Occupation
No.1	Female	22	Student
No.2	Female	26	Accountant
No.3	Female	27	Administration
No.4	Female	35	Sales
No.5	Female	42	Sales
No.6	Male	28	Sales
No.7	Male	29	Programmer
No.8	Male	28	Translator
No.9	Male	36	Sales
No.10	Male	45	Engineer

From the interviews, there were important findings regarding attitudes/behaviors towards environmental problem solving and regarding attitudes towards Biodegradable plastic.

Thai consumers were conscious and get information via online social media about environmental issues such as air pollution, waste disposal and microplastics in food. Becoming aware of the issues made them more attentive to what they purchase and what they consume. Many started to take action in helping/saving the environment.

Examples of the actions are reusing plastic packaging bags, refusing plastic bags, using personal tumblers instead of using plastic cups and using a personal container to get food from a store instead of using plastic bags. A few mentioned that they refrain from using food delivery service (Grab/Food Panda) because it creates a lot of waste from unnecessary packaging.

When asked about awareness of Biodegradable plastic, there were various responses. Some have never heard of the term before, some only have heard the word itself but do not know what Biodegradable plastic is and some have a good understanding of Biodegradable plastic. For those who were aware of Biodegradable plastic, they mentioned that the key characteristics of Biodegradable plastic are being able to break down and do not leave hazardous residual and can decompose by microorganisms.

Both benefits and concerns were raised towards Biodegradable plastic. As for the positive side, some think that using biodegradable plastic can be a healthier choice than traditional plastic because it's made from natural ingredients such as plants. They also mentioned that using biodegradable products would make them less guilty as they do not produce waste to the world as they would if they use traditional plastic because they think it would not breakdown in the next hundreds of years. On the other hand, many also pointed out some concerns they had towards Biodegradable plastic. Some still have concerns about the cost of production and how it will affect the price of the product. Some are concerned on the manufacturer that whether they can make the product work or not(they were unsure if the plastic can actually be biodegradable or the company just writes it on the product without being able to bio-decompose). Moreover, some mentioned on how the disposal will be managed; whether or not they need any additional steps in disposing of the product for it to be bio-decomposed. Kwan, one of the respondents (26 yrs. old female accountant), said “In Thailand, most of the garbage are not well managed and all types of garbage are mixed up in the same bin. I am quite concern on how the biodegradable will be managed for its disposal”

Overall, there was no rejection of Biodegradable plastic bottled water or coffee cups. There were two groups of people regarding willingness to pay extra for products made from biodegradable plastic. Some were not willing to pay any incremental price, and some were willing to do so. The incremental amount they were

willing to pay depends on how much they were paying for the product. If they were paying a small amount, they would only add a few extra Baht while. Vice versa, if they were paying for a more expensive product then they would be willing to pay more on the incremental.

4.2 Descriptive Research: Online survey

4.2.1. Demographics of respondents

There were in total of 228 respondents who passed the target respondent criteria and completed the survey. The average time spent on the survey is at 8 minutes. By looking at their demographics, there are more female respondents relative to male with the ratio of female (76.8%) and male (23.2%). Respondent's age ranges from 21-67 years old and the largest proportion is 20-29 years old (50.4%). They live in Bangkok (83.8%), Nonthaburi (8.8%), Pathum Thani (3.5%) and Samut Prakan (3.9%). They are of various occupations, but most are an employee of a private company (62.3%) with a monthly personal income of THB30,001-60,000 (40.8%). (See Table 4.2)

Table 4. 2

Demographics of Total Respondents

		Count	Percent
Total		228	100.0
Gender	Male	53	23.2
	Female	175	76.8
Age	21-29 years old	115	50.4
	30-39 years old	63	27.6
	40-49 years old	25	11.0
	50 years old and above	25	11.0
	Bangkok	191	83.8
	Nonthaburi	20	8.8

Province of	Pathum Thani	8	3.5
current residence		**Count**	**Percent**
	Samut Prakan	9	3.9
Occupation	Student	13	5.7
	Employee of private company	142	62.3
	Civil Servant (government sector)	15	6.6
	Specialized professional (i.e. doctor, lawyer, etc.)	7	3.1
	Business owner	28	12.3
	Freelance/self-employed	13	5.7
	Contractors	1	0.4
	Housewife/husband	2	0.9
	Retired	2	0.9
	Unemployed	5	2.2
Personal Monthly Income	THB 100,001+	19	8.3
	THB 60001-100000	51	22.4
	THB 30,001-60,000	93	40.8
	THB 30,000 or below	65	28.5
Marital Status	Single	169	74.1
	Married with kids	31	13.6
	Married without kids	21	9.2
	Divorced/separated/widowed with kids	6	2.6
	Divorced/separated/widowed without kids	1	0.4
	Highschool	2	0.9
Highest Education		**Count**	**Percent**
	Vocational School	2	0.9
	Bachelor's degree	131	57.5
	Master's degree	92	40.4
	Higher than a master's degree	1	0.4

Type of Residence	Detached house	91	39.9
	Townhouse / Twin house	45	19.7
	Condominium	49	21.5
	Apartment	20	8.8
	Shop lot	21	9.2
	Other	2	0.9

From all respondents, they can be organized into three groups based on the actual behavior they are currently taking action in consideration of helping and saving the environment. The groups are divided into "Less-active", "Moderately active" and "Highly active". Those in Less-active are those who conduct only 1-3 actions; Moderately active are those who currently doing 4-6 actions and those who are carrying out more than 6 actions are considered as Highly active (See Appendix E for the list of actions in the survey question that are used to define the groups). The proportions of the groups are Less-active (30.7%), Moderately-active (47.4%) and Highly-active (21.9%). There is no statistically significant difference in demographics among the three groups (See Appendix F).

Table 4. 3

Groups by the level of activeness towards actions on saving/ helping the environment

	Count	**Percent**
Less-active (1-3 actions)	70	30.7
Moderately-active (4-6 actions)	108	47.4
Highly-active (7 actions or more)	50	21.9
Total	228	100.0

4.2.1 Level of awareness of the type of plastic

Overall, those who are aware and understand about Degradable plastic is as low as 29.8% and a similar result can be seen for biodegradable plastic with 24.6%.

The largest proportion of respondents have heard the terms 'Degradable' and 'Biodegradable' but are not certain what they are with a score of 44.7% and 45.6% respectively.

Table 4. 4

Awareness of Degradable and Biodegradable plastics

		Count	Percent
Degradable plastic	Yes, I am aware and understand	68	29.8
	Have heard but not certain	102	44.7
	Not aware of it	58	25.4
	Total	228	100.0
Biodegradable plastic Biodegradable plastic	Yes, I am aware and understand	56	24.6
	Have heard but not certain	104	45.6
	Not aware of it	68	29.8
	Total	228	100.0

A cross-tabulation analysis is used to analyze whether there are differences among groups of different demographics (See Appendix G). There is no statistically significant difference among 'Monthly personal income', 'Marital status' or 'Type of residence'. However, statistically significant differences(p-value < 0.05) can be observed when comparing by their 'Gender', 'Age range' and 'Level of activeness towards actions on saving/helping the environment'. By gender, females are not aware of Degradable plastic more than Male ('Not aware of it': Female= 29.7%, Male= 11.3%). By age range, it can be observed that those of older age who are 40 years or above are not aware of Degradable plastic more than those in their 30's ('Not aware of it': 40 yrs. old or more= 40.0%, 30-39 yrs. old= 19.0%). Looking at Level of activeness towards actions on saving/helping the environment, those who are in 'Highly-active' group are more aware and understand about both Degradable plastic ('Yes, I am aware and understand': Highly-active=54.0%, Moderately-active=25.9%, Less-active=18.6%) and Biodegradable plastic (Highly-active=54.0%, Moderately-active=16.7%, Less-active=15.7%).

Most respondents think that degradable and biodegradable plastics are different (58.3%) while many are not sure and do not know whether these two types of plastics are different or not (36.4%).

Table 4. 5

Awareness of difference between Degradable and Biodegradable plastics

		Count	Percent Agree
Are biodegradable plastic and degradable plastic different?	They are different	133	58.3
	No difference	12	5.3
	Do not know/Not sure	83	36.4
	Total	228	100.0

4.2.2 Understanding and perception of biodegradable plastic of Thai consumers

Table 4. 6

Characteristics of Biodegradable plastics

	Count	Percent Agree
Total	228	100.0
Plastic that naturally breaks down by a biological process	132	57.9
Plastic that can decompose in nature	124	54.4
Plastic that is more expensive than normal plastic	101	44.3
Plastic that does not leave any residue in the environment	75	32.9
Plastic that does not cause any harm to health to consumers	67	29.4
Plastics that can decompose by microorganisms	65	28.5
More fragile and less durable than normal plastic	55	24.1

	Count	Percent Agree
Plastic that use raw materials as renewable sources such as plants	52	22.8
Plastic that can be recycled	47	20.6
Plastic that help reduce greenhouse gases	43	18.9
Plastic that does not cause pollution in the production process	42	18.4
Plastic that cannot be recycled	40	17.5
Same durability with normal plastic	38	16.7
Plastic that can be composed and used in fertilization for growing crops	33	14.5
Plastic that do not use dangerous chemical in manufacturing	23	10.1
Plastic that breakdown into small pieces but do not decompose	20	8.8
Plastic that is the same as normal plastic	11	4.8
Plastic that is cheaper than normal plastic	6	2.6
Stronger and more durable than normal plastic	5	2.2
Other	9	3.9
None of the above	1	0.4

The top five characteristics of Biodegradable plastic consist of its degradable process feature, its price, and its benefits. As for its feature on the degradable process, Biodegradable is understood as 'Plastic that naturally breaks down by biological process' (57.9%) and 'Plastics that can decompose in nature' (54.4%). These two are easy to understand as the word itself conveys this feature of the plastic. By demographic (See Appendix H), it can be observed that those 30-39 years old perceived 'Plastics that can decompose in nature' as the characteristic statistically significantly higher than those 40 years old or above (30-39 yrs. old= 69.8%, 40 yrs. old or above= 42.0%; p-value < 0.05).

The topic of Price was highly selected and ranked third as the characteristic of biodegradable. Biodegradable plastic is perceived as 'more expensive than normal plastic' (44.3%) while only a few think that it's 'the same as normal plastic' or 'cheaper than normal plastic' 4.8% and 2.6% respectively. Statistically significant difference can be observed when looking at the data by age range. Those 30-39 years old selected 'more expensive than normal plastic' significantly higher than of those 40 years old or

above (30-39 yrs. old= 50.8%, 40 yrs. old or above= 28.0%; p-value < 0.05). The older age group has less perception of the higher price as the main characteristic of biodegradable plastic.

'Plastic that does not leave any residue in the environment' (32.9%) and 'Plastic that does not cause any harm on health to consumers' (29.4%) are the two main benefits that are highly selected as the characteristics of biodegradable plastics.

Table 4. 7

Concerns towards Biodegradable plastics

	Count	**Percent Agree**
Total	228	100.0
Concerned on how disposal will be managed (do we need to separate Biodegradable plastic from other garbage or not) because in Thailand all garbage usually are mixed together and not separated	119	52.2
	Count	**Percent Agree**
Concerned that price will increase if the product is made with Biodegradable plastic	107	46.9
Concerned on recycling problem that might occur because it's difficult to differentiate types of plastic	101	44.3
Concerned on how to identify which product is made from Biodegradable plastic	98	43.0
Concerned on the time period it requires to completely decompose	98	43.0
Concerned on whether there will be any chemical residual left in nature	86	37.7
Concerned that it would be less durable than of traditional plastic	61	26.8

Concerned that there might be some chemical added in the biodegradable plastic which might cause harm to the health of users	59	25.9
Concerned that it would not be decomposable as claimed	52	22.8
Other concerns	1	0.4
I have no concerns	12	5.3

When asked if they have any concerns about Biodegradable plastics, only 5.3% of the total respondents mentioned that they 'have no concerns' while the rest 94.7% have at least one or more concerns. The main concern that respondents have is 'Concerned on how disposal will be managed (do we need to separate Biodegradable plastic from other garbage or not) because in Thailand all garbage usually are mixed together and not separated' (52.2%). On this concern, it is statistically significantly higher in the younger age group (20-29 yrs. old) relative to those 40 years old or above (20-29 yrs. Old=58.3%, 40 yrs. old or above=38.0%; p-value < 0.05) (See Appendix I). The other two main concerns that were being raised are 'Concerned that price will increase if the product is made with Biodegradable plastic' (46.9%) and 'Concerned on recycling problem that might occur because it's difficult to differentiate types of plastic' (44.3%). Concern regarding the recycling problem is statistically significantly higher in those who take a lot of actions in helping/saving the environment or those we refer to 'Highly-active' group relative to Moderately-active or Less-active (Highly-active=68.0%, Less-active=32.9% and Moderately-active=40.7%; p-value < 0.05).

4.2.3 Understanding of biodegradable plastic & its effect on product purchase intention

Table 4. 8

Rotated Component Matrix of Factor analysis

Rotated Component Matrix[a]				
	Component			
	1	2	3	4
I believe that Biodegradable plastic will help reduce greenhouse gases which is one of the causes of global warming	.843	.118	-.021	.063
I believe that Biodegradable plastic will help environmental hazards because it's using less petroleum	.757	.232	-.032	-.052
I believe that Biodegradable plastic will help reduce chemical residual or microplastic in food such as vegetable, fish and meat	.750	.080	-.139	-.133
I believe that Biodegradable plastic will help reduce global waste which is one of the global issues	.735	-.006	-.137	-.051
I agree to pay the higher price if the product is environmentally friendly products	.063	.822	-.156	-.150
I am happy to participate in environmental campaigns even have to pay by myself	.178	.768	-.119	.031
I agree if the government will impose taxes on goods or packaging that are damaging to the environment, such as plastic	.123	.600	.005	.412
Has difficulties in taking actions towards saving/helping the environment	-.008	-.106	.750	.008
I believe that environmental problems will decrease if we start from ourselves first	.094	.171	-.714	.210
I think environmental problems are the responsibility of the authority rather than my own responsibility	-.176	.001	.675	.123
Active in taking actions towards saving/helping the environment	-.031	.236	-.220	.770
Has concerns on Biodegradable plastic	-.182	-.288	.202	.615

Factor analysis was used to find similarities in behaviors and attitudes towards environmental problems and Biodegradable plastic. There was a total of 11 variables used in this factor analysis. The result showed four main attitude and behavior factors which can explain 61.15% of the total variance (See Appendix J). The four factors are named and explained as follows:

- Factor 1: 'Trust in benefit of Biodegradable plastic': This factor is the belief that Biodegradable plastic can help with environmental problems in various ways such as reducing greenhouse gases, reducing chemical residual or microplastic in food, etc.
- Factor 2: 'Willing to sacrifice': This factor is how willing one would sacrifice oneself for the betterment of the environment and society at large. The example of this is to pay more for the greener product or accepting taxes for packaging that are damaging to the environment, etc.
- Factor 3: 'Not my responsibility': This factor is the view that help saving environmental problems is difficult & it should be the responsibility of authority or others than oneself.
- Factor 4: 'Active & curious': This factor is the activeness in helping with environmental problems and being curious about Biodegradable plastic.

To see whether these 4 factors affect the purchase intention change towards bottled water & coffee cups made from Biodegradable plastic, the Regression Analysis is conducted. The results show that all four factors are statistically significant with a p-value < 0.05. 'F1: Trust in benefit of Biodegradable plastic', 'F2: Willing to sacrifice' and 'F4: Active & curious' have positive Beta of 0.209, 0.210 and 0.146 respectively. On the other hand, 'F3: Not my responsibility' had a negative Beta of -0.128.

Table 4. 9

Regression analysis's model coefficients Dependent variable: Purchase Intent

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.855	.045		86.583	.000
	F1: Trust in benefits of Biodegradable plastic	.149	.045	.209	3.333	.001
	F2: Willing to sacrifice	.149	.045	.210	3.340	.001
	F3: Not my responsibility	-.091	.045	-.128	-2.038	.043
	F4: Active & curious	.104	.045	.146	2.328	.021

By total respondents, a large proportion of those not willing to pay any money for biodegradable material in bottled water and coffee cup can be observed, 40.8% for bottled water and 38.6% for coffee cups. Those willing to pay incremental are largely willing to do so in the range between THB 1-5 incremental price.

Table 4. 10

Incremental price willing to pay if packaging is made from Biodegradable plastic material.

		Count	**Percent of those willing to pay**
Q24 Incremental Price for a bottled water made from Biodegradable plastic material.	Not willing to pay any	93	40.8
	THB 1-4	58	25.4
	THB 5	52	22.8
	THB 6-10	19	8.3
	THB 11+	6	2.6
Q25 Incremental Price for a coffee cup made	Not willing to pay any	88	38.6
	THB 1-4	42	18.4

		Count	Percent of those willing to pay
from Biodegradable plastic material.	THB 5	64	28.1
	THB 6-10	25	11.0
	THB 11+	9	3.9

Statistically significant differences can be observed in the age range for both the incremental price for bottled water and coffee cups. For bottled water, those Older age group (40+) is not willing to pay any incremental price more than Younger age group (20-29 yrs. old) [Older group=56.0%, Younger age group=34.8%; p-value < 0.05]. Similarly, for coffee cups, those Older age group (40+) is not willing to pay any incremental price more than Younger age group (20-29 yrs. old) [Older group=58.0%, Younger age group=31.3%; p-value < 0.05] (See Appendix K).

4.2.4 Attitude change towards companies/organization that uses biodegradable plastic for their product packaging

When talking about an environmentally friendly company or organization, more than 30 companies are being mentioned unaidedly from the total respondents. The first company/brand that came to respondent's minds unaidedly are PTT (13.2%) & SCG (13.2%) both ranked first with the same percentage. It can be noticed that the top two companies are of Thai national and both provide solutions that highly relate to natural resources. The two companies then followed by Seven-Eleven(10.1%), Starbucks(7.9%) and Bangchak / BCP(5.3%) which make up the top 5 companies/brands that respondents recalled as environmentally friendly.

Table 4. 11

Brand or company that comes to your mind when talking about environmentally friendly. (Up to 3 mentions per respondent)

	Total mentioned (Up to 3 mentions per respondent) In Percentage	
	Count	Percent
PTT	30	13.2
SCG	30	13.2
7-11 (Seven-Eleven)	23	10.1
Starbucks	18	7.9
Bangchak / BCP	12	5.3
Central	11	4.8
Toyota	11	4.8
Amazon Café	10	4.4
Nhamthip	10	4.4
TOPS	6	2.6
The Body Shop	6	2.6
CP	6	2.6
Tesco Lotus	5	2.2
Nestle	5	2.2
Isuzu	4	1.8
Singha	4	1.8
Intanin	3	1.3
Makro	3	1.3
THIP/Thantawan	3	1.3
Gray ray	2	0.9
Seventh Generation	2	0.9
ThaiBev	2	0.9
The mall	2	0.9
Mitrphol	2	0.9
AIS	1	0.4
EGCO	1	0.4

	Total mentioned (Up to 3 mentions per respondent) In Percentage	
	Count	Percent
Indorama	1	0.4
Kinto	1	0.4
Lush	1	0.4
Singha Estate PCL	1	0.4
Sun Bio	1	0.4
True Coffee	1	0.4
Doitung	1	0.4
IKEA	1	0.4
Cannot think of any company/brand	90	39.5

Of total respondents, the mean of 'Positive image change towards company/brand that uses Biodegradable plastic as their product packaging' is at 4.02 with a standard deviation of 0.657. A comparison of means by ANOVA is used and no statistically significant difference can be observed among different groups of demographics (See Appendix L). However, when the comparison is done among the level of activeness in taking actions in helping/saving the environment it can be observed that those 'Less-active' group had a lower mean of 3.91 which is statistically significantly lower than of 'Moderately-active' (4.08) and 'Highly active' (4.16) with p-value < 0.05.

Table 4. 12

Positive image change towards company/brand that uses Biodegradable plastic as their product packaging.

	N	**Mean**	**Std. Deviation**

Less-active (1-3 actions)	70	3.81	0.572
Moderately-active (4-6 actions)	108	4.08	0.598
Highly-active (7 actions or more)	50	4.16	0.817
Total	228	4.02	0.657

4.2.5 Profile of intended buyer of biodegradable bottled water & coffee cups

To find unique characteristic of those highly intended buyers of bottled water & coffee cups that made from biodegradable plastics, demographics data is compared between those 'High purchase interest change' and 'Lower purchase interest change'. There is no statistically significant difference among gender, age, occupation, income, marital status or highest education (See Appendix M). The only observable statistically significant difference is the level of activeness in taking actions in helping/saving the environment; Those with Lower purchase intention change is higher in the proportion of Less-active group relative to those High Purchase interest change (Those Lower purchase intention change=33.9%, Those High Purchase interest change=13.9%; p-value < 0.05).

Table 4. 13

Proportion of Level of activeness in taking actions in helping/saving the environment By Purchase intention change.

	Total **(Scale=1-5) Column Percent**	**High Purchase Interest Change** **(Scale=5) Column Percent**	**Lower Purchase Interest Change** **(Scale=1-4) Column Percent**
Less-active (1-3 actions)	30.7	13.9	33.9

Moderately-active (4-6 actions)	47.4	52.8	46.4
Highly-active (7 actions or more)	21.9	33.3	19.8

CHAPTER 5
SUMMARY AND CONCLUSIONS

5.1. Level of awareness of degradable and biodegradable plastic among Thai consumers

From this research, it can be observed that there are three groups of consumers regarding awareness of 'degradable' and 'biodegradable' plastics. Those who have never heard the terms, those who have heard the terms but were not certain what they are and those who are aware of the terms and understand what they are. In proportion, the largest group among the three groups is those who have heard of the terms 'degradable' and 'biodegradable' plastic but still were not certain what they are. The data also have shown that there are significant differences between gender and age range; the female was less aware of 'degradable' plastic and older age group of 40 years old or above were less aware of 'degradable' plastic relative to the younger age group.

There was only a very small group of consumers that misunderstood and thought that 'degradable' and 'biodegradable' are not different materials. Although the majority of consumers know that the two plastics are different, there was a group of those who were unsure and still do not know whether they are different or not.

5.2. Understanding and perception of biodegradable plastic

It can be observed that the majority of Thai consumers have the right understanding that 'biodegradable' plastics are "naturally break down by biological process" and "can decompose in nature" as its features. Moreover, 'Price' is also an attribute that highly mentioned for biodegradable plastic. Thai consumers perceived biodegradable plastic as to be more expensive than normal plastic; raising concerns for many that the price of the product might be increased due to the cost increase for manufacturers. Moreover, they were highly concerned about the disposal process of biodegradable plastic. They would like to know whether this type of plastic would need to be disposed of separately with other garbage or not for it to bio-decompose.

5.3. Understanding on biodegradable plastic & its effect on product purchase intention

The results of this research shown that there were mainly 4 factors that influence a consumer in their purchase intention change towards purchasing a plastic bottled water or coffee cup if they are made from biodegradable plastic. The 4 factors are 'F1: Trust in benefit of Biodegradable plastic', 'F2: Willing to sacrifice', 'F3: Not my responsibility' and 'F4: Active & curious'. Regression analysis showed that all factors except 'F3: Not my responsibility' have a positive influence on the purchase intention change.

As for incremental price in purchasing bottled water /coffee cups made from biodegradable plastic, the majority of Thai consumers are not willing to pay any incremental. Those willing to pay incremental are largely willing to do so in the range between THB 1-5 incremental price.

5.4. Attitude change towards companies/organization that use biodegradable plastic for their product packaging

PTT and SCG were the two companies being unaidedly mentioned when talking about environmentally friendly organizations. Both are Thai companies that provide solutions related to natural resources such as oil and paper. Among the companies/brands respondents mentioned, it can be observed that most are retail or B2C service business. For example, Seven-Eleven, Starbucks, Central, etc. Furthermore, if companies/brands start using biodegradable plastic as their material for its packaging consumers would have a positive image towards the company/brand.

5.5. Profile of intended buyer of biodegradable bottled water & coffee cups

Demographics data of those 'High purchase intention change' and those 'Lower purchase intention change' were compared. However, there were no characteristics of demographic differences that can be observed between the two groups. The only difference between the groups was activeness in taking actions in helping/saving the environment in which the 'Less-active' group tend to be in a larger proportion in those 'Lower purchase interest change'.

5.6 Recommendations

As this research has identified the 4 factors that influence purchase intention change, which were 'F1: Trust in benefit of Biodegradable plastic', 'F2: Willing to sacrifice', 'F3: Not my responsibility' and 'F4: Active & curious'. For firms to be able to sell products that use biodegradable plastic which are more environmentally friendly, they should focus on increasing the 3 factors as follows:

- 'F1: Trust in benefit of Biodegradable plastic', firms need to communicate on the benefits of using biodegradable and try to convince consumers that by using products with biodegradable plastic would help with the environmental issues that the society at large is currently facing. The benefits can include the topic of 'global warming', 'Chemical residual/microplastic in food' and 'global waste management issue'.
- 'F2: Willing to sacrifice', firms need to make sure that consumers feel appreciated when they pay extra for the products made from biodegradable plastic. Persuade them that every Baht they spend would be worth their sacrifice.
- 'F4: Active & curious'; Since a large group of consumers are not aware of the features of biodegradable plastic and still holding concerns towards it, firms need to educate consumers by providing information on biodegradable to eliminate their concerns. Examples of information are 'Disposal process', 'Recycle problem' and 'How to identify biodegradable plastic from other types of plastic'.

Firms should not mention or make it obvious for the consumers on the incremental price increase for products made from biodegradable plastic. The reason is that the majority of Thai consumers have concerns about the price increase and the

majority also not willing to pay any incremental price just for biodegradable plastic material.

5.7 Limitations of research

There were a few limitations to this research study. The number of samples in qualitative and quantitative were limited which might have an impact on the accuracy of the findings and might not represent the general Thai consumers aged 18-60 outside this research respondent's profile. Moreover, respondents were collected via a convenient sampling method and the channels used to distribute the survey were limited to online social media platforms such as LINE, Facebook, WhatsApp, and Facebook Messenger. These may have an impact on the similarity in the characteristics of the respondents.

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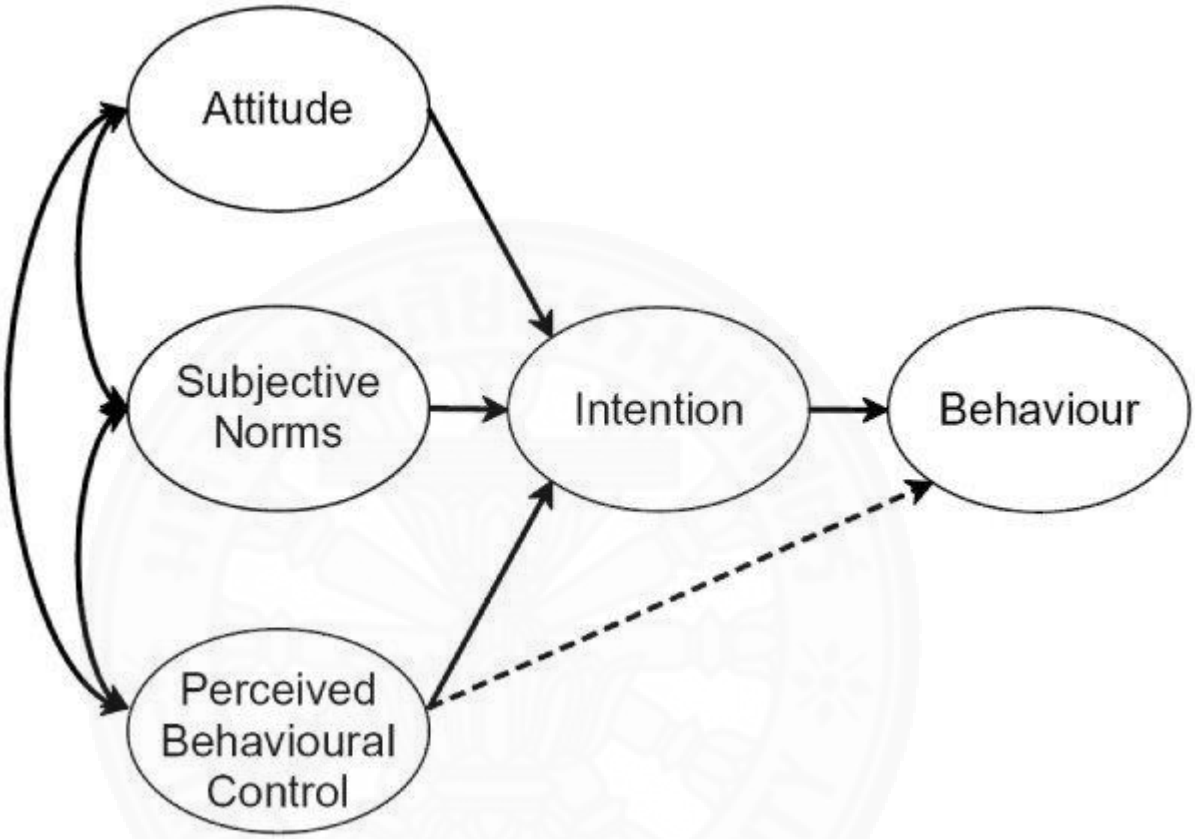
APPENDICES

APPENDIX A

Theory of Planned Behaviour (Ajzen, 1991)



APPENDIX B

Table of Socio-Economics Status Scale in Bangkok 2018

SES	Income per household (THB)	% of SES Distribution
A+	160,000+	2%
A	85,001 – 160,000	6%
B	50,001 – 85,000	12%
C+	35,001 – 50,000	12%
C	24,001 – 35,000	16%
C-	18,001 – 24,000	14%
D	7,501 – 18,000	32%
E	0 – 7,500	6%

Note. From Kasemsant, J. P. (2018). Standardization Of Socio-Economic Status (SES) Classification In Thailand Market Research Industry. Retrieved from http://www.marketing.au.edu/our-department/kms/440-standardization-of-socio-economic-status-ses-classification-in-thailand-market-research-industry.html

APPENDIX C

Discussion Guide for In-depth Interviews

Time	Question Guide	Objectives
5 mins	Interviewees' profiles 1) Name 2) Age 3) Occupation (How do they commute) 4) Demographic (maritage status, personal income, house type) 5) Daily Lifestyle (Shopping; how and where) - Probe on purchase of bottled water and coffee cups 6) Current behaviors in helping the environment	Ice-breaking (Objective5) To identify demographics and product purchase behavior to understand how the respondents purchase products.
10 mins	• Have you heard of "Biodegradable plastic"? (Show definition) Definition: Biodegradable plastics are plastics that can be decomposed by the action of living organisms into water, carbon dioxide, and biomass. Biodegradable	(Objective2) To identify the level of understanding and perception of biodegradable plastic of Thai consumers

Time	Question Guide	Objectives
	plastics are commonly produced with renewable raw materials, micro-organisms, petrochemicals, or combinations of all three. • What features do you think biodegradable plastic has? (Probe until respondents cannot think of any) • What are the benefits of using biodegradable plastic? (Towards you and towards the society) • What are your concerns on using biodegradable plastic? (Towards you and towards the society)	
5 mins	• If there is a bottled water product made from biodegradable plastic available, would you be interested in purchasing the product? • Why? Why not? • How much are you willing to pay more?	(Objective3) To identify whether the understanding of types of plastic can affect the purchase intention of bottled water/ plastic coffee cups
5 mins	• What company/brand comes to your mind when talking about taking actions to contribute to saving the environment? • What images do you have towards the companies?	(Objective4) To identify attitude change towards companies/organization that use biodegradable plastic for their packaging

Time	Question Guide	Objectives
	• If a company changes its packaging from traditional plastic to biodegradable plastic, does you image towards the company change? • How does it change?	

APPENDIX D

Online Survey Questions

Q1	Gender
1	Male
2	Female
Q2	Province of current residence
1	Bangkok
2	Nonthaburi
3	Pathum Thani
4	Samut Prakan
5	Other
Q3	Occupation
1	Student
2	Employee of private company
3	Civil Servant (government sector)
4	Specialized professional (i.e. doctor, architect, lawyer, etc.)
5	Farmer
6	Business owner
7	Freelance/self-employed
8	Skilled workers (i.e. mechanics, technician, etc.)
9	Non-skill workers (i.e. factory worker, maid, driver, etc.)
10	Contractors
11	Housewife/husband

12	Retired
13	Other
14	Unemployed
Q4	Age
	_____years old
Q5	Age range
1	Below 18
2	18-22
3	23-29
4	30-39
5	40-49
6	50-60
7	Above 60
Q6	Monthly personal income
1	Below 12,000
2	12,001-14,000
3	14,001-16,000
4	16,001-18,000
5	18,001-20,000
6	20,001-25,000
7	25,001-30,000
8	30,001-35,000
9	35,001-40,000
10	40,001-45,000

11	45,001-50,000
12	50,001-60,000
13	60,001-70,000
14	70,001-80,000
15	80,001-100,000
16	100,001-120,000
17	Above 120000
Q7	Monthly household income
1	Below 30,000
2	30,000-35,000
3	35,001-40,000
4	40,001-45,000
5	45,001-50,000
6	50,001-55,000
7	55,001-60,000
8	60,001-65,000
9	65,001-70,000
10	70,001-75,000
11	75,001-80,000
12	80,001-85,000
13	85,001 – 90,000
14	90,001 – 95,000
15	95,001 – 100,000
16	100,001 – 120,000

17	120,001 – 140,000
18	140,001 – 160,000
19	Above 160,000
Q8	Marital status
1	Single
2	Married with kids
3	Married without kids
4	Divorced/separated/widowed with kids
5	Divorced/separated/widowed without kids
Q9	Education
1	Primary school or below
2	Junior high school
3	Highschool
4	Associate degree
5	Bachelor’s degree
6	Master’s degree
7	Above master’s degree
Q10	Type of residence
1	Detached house
2	Townhouse / Twin house
3	Condominium
4	Apartment
5	Shop lot
6	Other

Q11	What products do you purchase and consume by yourself within the past 3 months?
1	Tissue paper
2	Laundry detergent
3	Fabric softener
4	Dish wash
5	Bottled water
6	Coffee in plastic cups
7	Ice-cream
8	Gum
9	None of the above
Q12	How often do you purchase the following item in the past 3 months?
LOOP1	Bottled water
LOOP2	Coffee in plastic cups
1	Almost everyday
2	4-5 times a week
3	2-3 times a week
4	1 time a week
5	2-3 times a month
6	1 time a month
7	Less than 1 time a month
Q13	In the past 1 year, what do you do in consideration of helping and saving the environment?
1	Do not receive plastic bag

2	Do not receive plastic straw
3	Use eco-bag
4	Reuse of plastic packaging
5	Use personal tumbler instead of using plastic cups
6	Use personal container to get food from store instead of using plastic bags
7	Refrain from using food delivery service (Grab/Food Panda) because it creates a lot of waste from packaging
8	Select product that has environmentally friendly materials
9	Choose to read on devices rather than printing on paper
10	Advocate others to be environmentally conscious and encourage them to help environment by using eco-bag, do not receive plastic straw, etc.
11	Warn other people when noticing behavior that would destroy the environment
12	Other
Q14	Which of the behavior/activity that you still find it difficult to do?
1	Do not receive plastic bag
2	Do not receive plastic straw
3	Use eco-bag
4	Reuse of plastic packaging
5	Use personal tumbler instead of using plastic cups
6	Use personal container to get food from store instead of using plastic bags

7	Refrain from using food delivery service (Grab/Food Panda) because it creates a lot of waste from packaging
8	Select product that has environmentally friendly materials
9	Choose to read on devices rather than printing on paper
10	Advocate others to be environmentally conscious and encourage them to help environment by using eco-bag, do not receive plastic straw, etc.
11	Warn other people when noticing behavior that would destroy the environment
12	Other
Q15	Interest and importance about environmental issues
1	No interest/importance
2	Somewhat no interest/importance
3	Neutral
4	Somewhat has interest/importance
5	Has interest/importance
Q16	How much do you agree towards each of the following statements?
LOOP1	I believe that environmental problems will decrease if we start from ourselves first
LOOP2	I think environmental problems are the responsibility of the authority rather than my own responsibility
LOOP3	I agree if the government will impose taxes on goods or packaging that are damaging to the environment, such as plastic
LOOP4	I agree to pay the higher price if the product is environmentally friendly products

LOOP5	I am happy to participate in environmental campaigns even have to pay by myself
1	Strongly disagree
2	Somewhat disagree
3	Neutral
4	Somewhat agree
5	Strongly agree
Q17	Which brand or company come to your mind when talking about environmentally friendly?
LOOP1	1st mention
LOOP2	2nd mention
LOOP3	3rd mention
	Company_____
Q18	Are you aware of Degradable plastic which are plastic that quickly fragment into smaller and smaller pieces (microplastic)?
1	Yes, I am aware and understand
2	Have heard but not certain
3	No
Q19	Are you aware of Biodegradable plastics which are plastics that can be decomposed by the action of living organisms into water, carbon dioxide, and biomass?
1	Yes, I am aware and understand
2	Have heard but not certain
3	No

Q20	What are the characteristics of Biodegradable plastics?
1	Stronger and more durable than normal plastic
2	Same durability with normal plastic
3	More fragile and less durable than normal plastic
4	Plastic that is cheaper than normal plastic
5	Plastic that is the same as normal plastic
6	Plastic that is more expensive than normal plastic
7	Plastics that can be recycled
8	Plastics that cannot be recycled
9	Naturally biodegradable plastic
10	Plastics that help reduce greenhouse gases
11	Plastics that use raw materials as renewable sources such as plants
12	Plastic that does not cause pollution in the production process
13	Plastic that does not leave a residue in the environment
14	Plastics that can decompose by microorganisms
15	Plastics that can be composed and used in fertilization for growing crops
16	Plastics that breakdown into small pieces but do not decompose
17	Plastics that is decompose in nature
18	Plastics that does not cause any harm on health to consumers
19	Plastics that does not use dangerous chemical in manufacturing
20	None of the above
21	Other
Q21	Are biodegradable plastic and degradable plastic different?

1	They are different
2	No difference
3	Do not know/Not sure
Q22	How much do you agree towards each of the following statements?
LOOP1	I believe that Biodegradable plastic will help reduce global waste which is one of the global issues
LOOP2	I believe that Biodegradable plastic will help reduce chemical residual or microplastic in food such as vegetable, fish and meat
LOOP3	I believe that Biodegradable plastic will help reduce greenhouse gases which is one of the causes of global warming
LOOP4	I believe that Biodegradable plastic will help environmental hazards because it's using less petroleum
1	Strongly disagree
2	Somewhat disagree
3	Neutral
4	Somewhat agree
5	Strongly agree
	Definition: Biodegradable plastics are plastics that can be decomposed by the action of living organisms into water, carbon dioxide, and biomass. Biodegradable plastics are commonly produced with renewable raw materials, micro-organisms, petrochemicals, or combinations of all three.
Q23	After reading definition of Biodegradable plastic, would your purchase intention change towards bottled water/ coffee cups products?

1	Definitely less interested to buy
2	Less interested to buy
3	No changes
4	More interested to buy
5	Definitely more interested to buy
Q24	Price willing to pay
LOOP1	Price willing to pay for biodegradable plastic in bottled water products
LOOP2	Price willing to pay for biodegradable plastic in coffee cups
	Incremental price_____
Q25	Do you have any concerns or doubts towards on using Biodegradable plastics?
1	Concerned that price increase of product with Biodegradable plastic
2	Concerned that it would not be decomposable as claimed
3	Concerned on how to identify which product is made from Biodegradable plastic
4	Concerned that there might be some chemical added in the biodegradable plastic which might cause harm to health of users
5	Concerned that it would be less durable than of traditional plastic
6	Concerned on the time period it requires to all decompose
7	Concerned on whether there be any chemical residual left in nature
8	Concerned on recycle problem that might occur because it's difficult to differentiate types of plastic
9	Concerned on how disposal will be managed because in Thailand all garbage usually are mixed together and not separated

10	I have NO concerns
11	Other concerns
Q26	If a manufacturer/brand uses biodegradable plastic as their product packaging, how will your impression change towards that manufacturer/brand?
1	Much worse
2	Worse
3	Do not change
4	Better
5	Much better

APPENDIX E

List of actions in the survey question that are used to define the groups.

• Do not receive plastic bag
• Do not receive plastic straw
• Use eco-bag
• Reuse of plastic packaging
• Use personal tumbler instead of using plastic cups
• Use personal container to get food from store instead of using plastic bags
• Refrain from using food delivery service (Grab/Food Panda) because it creates a lot of waste from packaging
• Select product that has environmentally friendly materials
• Choose to read on devices rather than printing on paper
• Advocate others to be environmentally conscious and encourage them to help environment by using eco-bag, do not receive plastic straw, etc.
• Warn other people when noticing behavior that would destroy the environment

Grouping By 'Level of activeness'

Group name	Criteria
Less-active	Those who currently conduct 1-3 actions
Moderately-active	Those who currently conduct 4-6 actions
Highly-active	Those who currently conduct 7- 11 actions

APPENDIX F

Pearson Chi-Square Tests: Demographics data by the Level of activeness

Pearson Chi-Square Tests								
		Gender	Age Range	Personal monthly income	Occupation	Marital status	Highest Education	Type of Residence
Level of activeness by behavior	Chi-square	1.212	1.518	6.133	10.669	6.571	6.796	11.581
	df	2	4	6	18	8	8	10
	Sig.	.546	.823	.408	.908[a,b]	.584[a,b]	.559[a,b]	.314[a,b]
Results are based on nonempty rows and columns in each innermost subtable.								
a. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.								
b. The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.								

APPENDIX G

Cross tabulations and Significant Testing of Awareness data by demographic groups

			Gender		Q4_AgeRange			Personal monthly income ranges (4 ranges)				Marital status					Type of Residence						Level of activeness by behavior		
		Total	Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	THB 30,000 or below	THB 30,001-60,000	THB 60001-100000	THB 100,001+	Single	Married with kids	Married without kids	Divorced/seperated/widowed with kids	Divorced/seperated/widowed without kids	Detached house	Townhouse / Twin house	Condominium	Apartment	Shoplot	Other	Less-active (1-3 actions)	Moderately-active (4-6 actions)	Highly-active (7 actions or more)
		Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %
	n=			53	175	115	63	50	65	93	51	19	169	31	21	6	1	91	45	49	20	21	2	70	108
Are you aware of Degradable plastic which are plastic that quickly fragment into smaller and	Yes, I am aware and understand	29.8%	35.8%	28.0%	33.9%	34.9%	14.0%	20.0%	30.1%	39.2%	36.8%	32.0%	22.6%	33.3%	0.0%	0.0%	29.7%	26.7%	34.7%	35.0%	23.8%	0.0%	18.6%	25.9%	54.0%
	Have heard but not certain	44.7%	52.8%	42.3%	43.5%	46.0%	46.0%	46.2%	47.3%	41.2%	36.8%	45.0%	48.4%	38.1%	50.0%	0.0%	45.1%	44.4%	46.9%	30.0%	57.1%	0.0%	47.1%	47.2%	36.0%
	No	25.4%	11.3%	29.7%	22.6%	19.0%	40.0%	33.8%	22.6%	19.6%	26.3%	23.1%	29.0%	28.6%	50.0%	100.0%	25.3%	28.9%	18.4%	35.0%	19.0%	100.0%	34.3%	26.9%	10.0%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Are you aware of Biodegradable plastics which are plastics that can be	Yes, I am aware and understand	24.6%	30.2%	22.9%	25.2%	27.0%	20.0%	18.5%	24.7%	33.3%	21.1%	24.9%	22.6%	33.3%	0.0%	0.0%	25.3%	20.0%	26.5%	30.0%	19.0%	50.0%	15.7%	16.7%	54.0%
	Have heard but not certain	45.6%	47.2%	45.1%	47.8%	46.0%	40.0%	49.2%	47.3%	39.2%	42.1%	47.3%	51.6%	33.3%	16.7%	0.0%	38.5%	48.9%	51.0%	45.0%	57.1%	50.0%	45.7%	49.1%	38.0%
	No	29.8%	22.6%	32.0%	27.0%	27.0%	40.0%	32.3%	28.0%	27.5%	36.8%	27.8%	25.8%	33.3%	83.3%	100.0%	36.3%	31.1%	22.4%	25.0%	23.8%	0.0%	38.6%	34.3%	8.0%
Are biodegradable plastic and degradable plastic different?	They are different	58.3%	62.3%	57.1%	68.7%	63.5%	28.0%	55.4%	62.4%	54.9%	57.9%	66.3%	32.3%	47.6%	0.0%	100.0%	63.7%	48.9%	57.1%	65.0%	52.4%	50.0%	52.9%	53.7%	76.0%
	No difference	5.3%	3.8%	5.7%	4.3%	3.2%	10.0%	4.6%	5.4%	5.9%	5.3%	4.1%	12.9%	4.8%	0.0%	0.0%	3.3%	8.9%	4.1%	10.0%	4.8%	0.0%	5.7%	6.5%	2.0%
	Do not know/Not sure	36.4%	34.0%	37.1%	27.0%	33.3%	62.0%	40.0%	32.3%	39.2%	36.8%	29.6%	54.8%	47.6%	100.0%	0.0%	33.0%	42.2%	38.8%	25.0%	42.9%	50.0%	41.4%	39.8%	22.0%

Comparisons of Column Proportions[c]

			Gender		Q4_AgeRange			Personal monthly income ranges (4 ranges)				Marital status					Type of Residence						Level of activeness by behavior		
			Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	THB 30,000 or below	THB 30,001-60,000	THB 60001-100000	THB 100,001+	Single	Married with kids	Married without kids	Divorced/seperated/widowed with kids	Divorced/seperated/widowed without kids	Detached house	Townhouse / Twin house	Condominium	Apartment	Shoplot	Other	Less-active (1-3 actions)	Moderately-active (4-6 actions)	Highly-active (7 actions or more)
			(A)	(B)	(A)	(B)	(C)	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)	(E)	(A)	(B)	(C)	(D)	(E)	(F)	(A)	(B)	(C)
Are you aware of Degradable plastic which are plastic that quickly fragment	Yes, I am aware and understand				C	C									a	a,b						a			A B
	Have heard but not certain															a,b						a			
	No			A			B									a,b						a	C	C	
Are you aware of Biodegradable plastics which are plastics that can be	Yes, I am aware and understand														a	a,b									A B
	Have heard but not certain															a,b									
	No														A B	a,b						a	C	C	
Are biodegradable plastic and degradable plastic different?	They are different				C	C						B			a	a,b									A B
	No difference														a	a,b						a			
	Do not know/Not sure						A B						A		a	a,b									

Results are based on two-sided tests with significance level .05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. This category is not used in comparisons because its column proportion is equal to zero or one.

b. This category is not used in comparisons because the sum of case weights is less than two.

c. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

APPENDIX H

Cross tabulations and Significant Testing of Biodegradable plastic perceived characteristics by demographic groups

			Gender		Q4_AgeRange			Personal monthly income ranges (4 ranges)				Marital status					Type of Residence					
		Total	Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	THB 30,000 or below	THB 30,001-60,000	THB 60001-100000	THB 100,001+	Single	Married with kids	Married without kids	Divorced/seperated/widowed with kids	Divorced/seperated/widowed without kids	Detached house	Townhouse / Twin house	Condominium	Apartment	Shoplot	Other
		Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %
Q20 MA Response Set: What are the characteristics of compostable plastics?	Stronger and more durable than normal plastic	2.2%	7.5%	.6%	2.6%	3.2%	0.0%	3.1%	1.1%	2.0%	5.3%	2.4%	3.2%	0.0%	0.0%	0.0%	2.2%	4.4%	0.0%	0.0%	4.8%	0.0%
	Same durability with normal plastic	16.7%	13.2%	17.7%	21.7%	14.3%	8.0%	13.8%	16.1%	17.6%	26.3%	18.9%	12.9%	9.5%	0.0%	0.0%	14.3%	20.0%	18.4%	20.0%	9.5%	50.0%
	More fragile and less durable than normal plastic	24.1%	24.5%	24.0%	28.7%	25.4%	12.0%	20.0%	30.1%	23.5%	10.5%	26.6%	12.9%	19.0%	33.3%	0.0%	25.3%	26.7%	18.4%	25.0%	23.8%	50.0%
	Plastic that is cheaper than normal plastic	2.6%	0.0%	3.4%	2.6%	1.6%	4.0%	1.5%	4.3%	0.0%	5.3%	2.4%	6.5%	0.0%	0.0%	0.0%	2.2%	4.4%	2.0%	5.0%	0.0%	0.0%
	Plastic that is the same as normal plastic	4.8%	7.5%	4.0%	7.8%	3.2%	0.0%	6.2%	3.2%	5.9%	5.3%	5.9%	0.0%	4.8%	0.0%	0.0%	3.3%	2.2%	2.0%	15.0%	14.3%	0.0%
	Plastic that is more expensive than normal plastic	44.3%	47.2%	43.4%	47.8%	50.8%	28.0%	35.4%	51.6%	43.1%	42.1%	47.3%	32.3%	42.9%	16.7%	100.0%	38.5%	48.9%	57.1%	35.0%	38.1%	50.0%
	Plastics that can be recycled	20.6%	24.5%	19.4%	26.1%	17.5%	12.0%	16.9%	21.5%	17.6%	36.8%	21.3%	22.6%	19.0%	0.0%	0.0%	15.4%	31.1%	22.4%	15.0%	23.8%	0.0%
	Plastics that cannot be recycled	17.5%	15.1%	18.3%	23.5%	12.7%	10.0%	20.0%	18.3%	17.6%	5.3%	19.5%	9.7%	14.3%	16.7%	0.0%	15.4%	17.8%	16.3%	25.0%	19.0%	50.0%
	Naturally biodegradable plastic	57.9%	56.6%	58.3%	56.5%	63.5%	54.0%	52.3%	55.9%	66.7%	63.2%	58.0%	51.6%	61.9%	66.7%	100.0%	56.0%	64.4%	49.0%	55.0%	71.4%	100.0%
	Plastics that help reduce greenhouse gases	18.9%	20.8%	18.3%	18.3%	20.6%	18.0%	20.0%	14.0%	21.6%	31.6%	18.3%	9.7%	33.3%	16.7%	100.0%	18.7%	6.7%	26.5%	35.0%	9.5%	50.0%
	Plastics that use raw materials as renewable sources such as plants	22.8%	26.4%	21.7%	25.2%	19.0%	22.0%	15.4%	23.7%	27.5%	31.6%	24.3%	16.1%	23.8%	0.0%	100.0%	20.9%	31.1%	22.4%	10.0%	28.6%	0.0%
	Plastic that does not cause pollution in the production process	18.4%	15.1%	19.4%	19.1%	15.9%	20.0%	21.5%	21.5%	7.8%	21.1%	20.7%	12.9%	9.5%	0.0%	100.0%	18.7%	8.9%	24.5%	15.0%	19.0%	100.0%
	Plastic that does not leave a residue in the environment	32.9%	28.3%	34.3%	31.3%	34.9%	34.0%	26.2%	38.7%	29.4%	36.8%	34.9%	22.6%	38.1%	16.7%	0.0%	36.3%	22.2%	34.7%	25.0%	38.1%	100.0%
	Plastics that can decompose by microorganisms	28.5%	30.2%	28.0%	30.4%	28.6%	24.0%	29.2%	29.0%	29.4%	21.1%	29.6%	29.0%	19.0%	16.7%	100.0%	26.4%	26.7%	26.5%	45.0%	28.6%	50.0%
	Plastics that can be composed and used in fertilization for growing crc	14.5%	15.1%	14.3%	20.0%	11.1%	6.0%	15.4%	16.1%	15.7%	0.0%	17.8%	0.0%	14.3%	0.0%	0.0%	11.0%	15.6%	20.4%	20.0%	9.5%	0.0%
	Plastics that breakdown into small pieces but do not decompose	8.8%	13.2%	7.4%	10.4%	11.1%	2.0%	6.2%	8.6%	13.7%	5.3%	10.1%	6.5%	4.8%	0.0%	0.0%	5.5%	4.4%	18.4%	10.0%	9.5%	0.0%
	Plastics that is decompose in nature	54.4%	49.1%	56.0%	51.3%	69.8%	42.0%	55.4%	55.9%	51.0%	52.6%	57.4%	48.4%	47.6%	33.3%	0.0%	51.6%	37.8%	67.3%	60.0%	61.9%	100.0%
	Plastics that does not cause any harm on health to consumers	29.4%	32.1%	28.6%	24.3%	31.7%	38.0%	32.3%	30.1%	25.5%	26.3%	26.6%	35.5%	38.1%	33.3%	100.0%	30.8%	22.2%	28.6%	30.0%	38.1%	50.0%
	Plastics that does not use dangerous chemical in manufacturing	10.1%	7.5%	10.9%	7.8%	11.1%	14.0%	10.8%	12.9%	3.9%	10.5%	9.5%	12.9%	9.5%	0.0%	100.0%	13.2%	2.2%	14.3%	5.0%	9.5%	0.0%
	None of the above	.4%	0.0%	.6%	.9%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	.6%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	3.9%	3.8%	4.0%	1.7%	1.6%	12.0%	1.5%	3.2%	5.9%	10.5%	2.4%	9.7%	4.8%	16.7%	0.0%	5.5%	4.4%	2.0%	0.0%	4.8%	0.0%

Comparisons of Column Proportions[c]

		Gender		Q4_AgeRange			Personal monthly income ranges (4 ranges)				Marital status					Type of Residence					
		Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	THB 30,000 or below	THB 30,001-60,000	THB 60001-100000	THB 100,001+	Single	Married with kids	Married without kids	Divorced/seperated/widowed with kids	Divorced/seperated/widowed without kids	Detached house	Townhouse / Twin house	Condominium	Apartment	Shoplot	Other
		(A)	(B)	(A)	(B)	(C)	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)	(E)	(A)	(B)	(C)	(D)	(E)	(F)
Q20 MA Response Set: What are the characteristics of compostable plastics?	Stronger and more durable than normal plastic	B				a							a	a	a,b			a	a		a
	Same durability with normal plastic													a	a,b						
	More fragile and less durable than normal plastic													a	a,b						
	Plastic that is cheaper than normal plastic	a							a				a	a	a,b					a	a
	Plastic that is the same as normal plastic					a						a		a	a,b						a
	Plastic that is more expensive than normal plastic				C									a	a,b						
	Plastics that can be recycled													a	a,b						a
	Plastics that cannot be recycled														a,b						
	Naturally biodegradable plastic														a,b						a
	Plastics that help reduce greenhouse gases														a,b						
	Plastics that use raw materials as renewable sources such as plants													a	a,b						a
	Plastic that does not cause pollution in the production process													a	a,b						a
	Plastic that does not leave a residue in the environment														a,b						a
	Plastics that can decompose by microorganisms														a,b						
	Plastics that can be composed and used in fertilization for growing crops									a		a		a	a,b						a
	Plastics that breakdown into small pieces but do not decompose													a	a,b						a
	Plastics that is decompose in nature				A C										a,b			B			a
	Plastics that does not cause any harm on health to consumers														a,b						
	Plastics that does not use dangerous chemical in manufacturing													a	a,b						a
	None of the above	a			a	a	a		a	a		a	a	a	a,b		a	a	a	a	a
	Other					A									a,b				a		

Results are based on two-sided tests with significance level .05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. This category is not used in comparisons because its column proportion is equal to zero or one.

b. This category is not used in comparisons because the sum of case weights is less than two.

APPENDIX I

Cross tabulations and Significant Testing of Concerns on Biodegradable plastic by demographic groups

	Gender		Q4_AgeRange			Monthly personal income																Level of activeness by behavior		
	Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	Below 12,000 THB	12,001-14,000 THB	14,001-16,000 THB	16,001-18,000 THB	18,001-20,000 THB	20,001-25,000 THB	25,001-30,000 THB	30,001-35,000 THB	35,001-40,000 THB	40,001-45,000 THB	45,001-50,000 THB	50,001-60,000 THB	60,001-70,000 THB	70,001-80,000 THB	80,001-100,000 THB	100,001-120,000 THB	มากกว่า 120,000 THB	Less-active (1-3 actions)	Moderately-active (4-6 actions)	Highly-active (7 actions or more)
	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %
Q25 MA Re Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Concerned that price will increase if product is m	45.3%	47.4%	43.5%	42.9%	60.0%	62.5%	66.7%	50.0%	100.0%	0.0%	42.1%	45.5%	66.7%	43.8%	61.1%	81.3%	44.0%	50.0%	37.5%	26.3%	0.0%	45.5%	54.3%	47.2%	36.0%
Concerned that it would not be decomposable as	24.5%	22.3%	26.1%	25.4%	12.0%	12.5%	0.0%	25.0%	0.0%	14.3%	15.8%	22.7%	16.7%	18.8%	22.2%	25.0%	16.0%	43.8%	31.3%	31.6%	25.0%	27.3%	22.9%	17.6%	34.0%
Concerned on how to identify which product is m	43.4%	42.9%	49.6%	36.5%	36.0%	62.5%	66.7%	25.0%	0.0%	0.0%	42.1%	54.5%	38.9%	43.8%	50.0%	50.0%	32.0%	56.3%	50.0%	31.6%	37.5%	45.5%	38.6%	50.9%	32.0%
Concerned that there might be some chemical ad	24.5%	26.3%	27.8%	25.4%	22.0%	25.0%	0.0%	25.0%	50.0%	14.3%	15.8%	31.8%	33.3%	18.8%	22.2%	43.8%	44.0%	12.5%	12.5%	31.6%	12.5%	18.2%	25.7%	23.1%	32.0%
Concerned that it would be less durable than of t	22.6%	28.0%	34.8%	17.5%	20.0%	25.0%	33.3%	25.0%	100.0%	28.6%	15.8%	27.3%	50.0%	25.0%	38.9%	37.5%	24.0%	6.3%	25.0%	15.8%	37.5%	9.1%	27.1%	27.8%	24.0%
Concerned on the time period it requires to comp	47.2%	41.7%	49.6%	44.4%	26.0%	62.5%	33.3%	50.0%	100.0%	28.6%	31.6%	31.8%	33.3%	43.8%	50.0%	50.0%	40.0%	50.0%	43.8%	42.1%	50.0%	54.5%	35.7%	45.4%	48.0%
Concerned on whether there will be any chemica	39.6%	37.1%	40.0%	41.3%	28.0%	12.5%	0.0%	75.0%	0.0%	28.6%	31.6%	45.5%	27.8%	62.5%	50.0%	37.5%	48.0%	31.3%	18.8%	42.1%	50.0%	18.2%	30.0%	38.0%	48.0%
Concerned on recycle problem that might occur b	41.5%	45.1%	47.0%	47.6%	34.0%	37.5%	33.3%	50.0%	0.0%	28.6%	52.6%	50.0%	38.9%	43.8%	44.4%	43.8%	48.0%	37.5%	50.0%	36.8%	50.0%	54.5%	32.9%	40.7%	68.0%
Concerned on how disposal will be managed (do	52.8%	52.0%	58.3%	52.4%	38.0%	50.0%	66.7%	75.0%	50.0%	28.6%	47.4%	50.0%	38.9%	68.8%	55.6%	56.3%	52.0%	75.0%	62.5%	31.6%	50.0%	45.5%	37.1%	53.7%	70.0%
I hav NO concerns	9.4%	4.0%	3%	9.5%	6.0%	0.0%	0.0%	0.0%	0.0%	28.6%	5.3%	4.5%	5.6%	0.0%	0.0%	0.0%	4.0%	0.0%	12.5%	15.8%	0.0%	9.1%	4.3%	6.5%	4.0%
Other concerns	0.0%	.6%	0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.1%	0.0%	0.0%	2.0%

Comparisons of Column Proportions[b]

	Gender		Q4_AgeRange			Monthly personal income																Level of activeness by behavior		
	Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	Below 12,000 THB	12,001-14,000 THB	14,001-16,000 THB	16,001-18,000 THB	18,001-20,000 THB	20,001-25,000 THB	25,001-30,000 THB	30,001-35,000 THB	35,001-40,000 THB	40,001-45,000 THB	45,001-50,000 THB	50,001-60,000 THB	60,001-70,000 THB	70,001-80,000 THB	80,001-100,000 THB	100,001-120,000 THB	มากกว่า 120,000 THB	Less-active (1-3 actions)	Moderately-active (4-6 actions)	Highly-active (7 actions or more)
	(A)	(B)	(A)	(B)	(C)	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)	(A)	(B)	(C)
Q25 MA Re Concerned that price will increase if product is m									a	a											a			
Concerned that it would not be decomposable as							a		a															
Concerned on how to identify which product is m									a	a														
Concerned that there might be some chemical ad							a																	
Concerned that it would be less durable than of t			B						a															
Concerned on the time period it requires to comp			C						a															
Concerned on whether there will be any chemica							a		a															
Concerned on recycle problem that might occur b									a															A B
Concerned on how disposal will be managed (do			C																					A
I hav NO concerns						a	a	a	a				a	a	a		a				a			
Other concerns	a		a	a		a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a		

Results are based on two-sided tests with significance level .05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. This category is not used in comparisons because its column proportion is equal to zero or one.

b. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

APPENDIX J

Factor Analysis: Table of Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.258	27.146	27.146	3.258	27.146	27.146	2.513	20.942	20.942
2	1.746	14.554	41.700	1.746	14.554	41.700	1.880	15.664	36.606
3	1.263	10.526	52.226	1.263	10.526	52.226	1.694	14.117	50.723
4	1.071	8.923	61.149	1.071	8.923	61.149	1.251	10.427	61.149
5	.993	8.275	69.424						
6	.725	6.043	75.467						
7	.614	5.118	80.586						
8	.560	4.663	85.249						

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
9	.541	4.512	89.761						
10	.496	4.136	93.897						
11	.400	3.336	97.233						
12	.332	2.767	100.000						

Extraction Method: Principal Component Analysis.

APPENDIX K

Cross tabulations and Significant Testing of willing-to-pay incremental price on Biodegradable plastic by demographic groups

		Gender			Q4_AgeRange			Occupation												
		Total	Male	Female	e group (Unt	e group (30-	age group	Other	Student	e of private	nt (governm	(i.e. doctor	Farmer	usiness own	nce/self-em	e. mechanic	factory wor	Contractors	sewife/husb	Retired	Unemployed
		Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %
Q24 Incremental Price for water bottle made from Biodegradable plastic	Not willing t	40.8%	39.6%	41.1%	34.8%	39.7%	56.0%	0.0%	46.2%	37.3%	46.7%	42.9%	0.0%	46.4%	46.2%	0.0%	0.0%	0.0%	100.0%	50.0%	40.0%
	THB 1-4	25.4%	22.6%	26.3%	25.2%	27.0%	24.0%	0.0%	23.1%	25.4%	13.3%	14.3%	0.0%	35.7%	23.1%	0.0%	0.0%	100.0%	0.0%	50.0%	20.0%
	THB 5	22.8%	24.5%	22.3%	25.2%	25.4%	14.0%	0.0%	7.7%	25.4%	40.0%	28.6%	0.0%	7.1%	23.1%	0.0%	0.0%	0.0%	0.0%	0.0%	40.0%
	THB 6-10	8.3%	9.4%	8.0%	11.3%	4.8%	6.0%	0.0%	23.1%	9.2%	0.0%	0.0%	0.0%	10.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	THB 11+	2.6%	3.8%	2.3%	3.5%	3.2%	0.0%	0.0%	0.0%	2.8%	0.0%	14.3%	0.0%	0.0%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Q25 Incremental Price for coffee cup made from Biodegradable plastic	Not willing t	38.6%	37.7%	38.9%	31.3%	36.5%	58.0%	0.0%	38.5%	35.9%	46.7%	42.9%	0.0%	42.9%	46.2%	0.0%	0.0%	0.0%	100.0%	50.0%	20.0%
	THB 1-4	18.4%	15.1%	19.4%	14.8%	22.2%	22.0%	0.0%	7.7%	16.2%	20.0%	28.6%	0.0%	28.6%	15.4%	0.0%	0.0%	0.0%	0.0%	50.0%	40.0%
	THB 5	28.1%	28.3%	28.0%	33.0%	28.6%	16.0%	0.0%	38.5%	31.0%	33.3%	14.3%	0.0%	17.9%	23.1%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	THB 6-10	11.0%	15.1%	9.7%	16.5%	6.3%	4.0%	0.0%	15.4%	12.7%	0.0%	0.0%	0.0%	7.1%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	40.0%
	THB 11+	3.9%	3.8%	4.0%	4.3%	6.3%	0.0%	0.0%	0.0%	4.2%	0.0%	14.3%	0.0%	3.6%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Comparisons of Column Proportions[c]

			Gender		Q4_AgeRange			Occupation													
			Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	Other	Student	Employee of private company	Civil Servant (government sector)	Specialized professional (i.e. doctor, archetect, lawyer, etc.)	Farmer	Business owner	Freelance/ self-employed	Skilled workers (i.e. mechanics, tecnician, etc.)	Non-skill workers (i.e. factory worker, maid, driver, etc.)	Contractors	Housewife/ husband	Retired	Unemployed
			(A)	(B)	(A)	(B)	(C)	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
Q24 Incremental Price for water bottle made from Biodegradable plastic	Not willing to pay any						A	a,b					a,b			a,b	a,b	a,b	a		
	THB 1-4							a,b					a,b			a,b	a,b	a,b	a		
	THB 5							a,b					a,b			a,b	a,b	a,b	a	a	
	THB 6-10							a,b			a	a	a,b		a	a,b	a,b	a,b	a	a	a
	THB 11+						a	a,b	a		a		a,b	a		a,b	a,b	a,b	a	a	a
Q25 Incremental Price for coffee cup made from Biodegradable plastic	Not willing to pay any						A	a,b					a,b			a,b	a,b	a,b	a		
	THB 1-4							a,b					a,b			a,b	a,b	a,b	a		
	THB 5							a,b					a,b			a,b	a,b	a,b	a	a	a
	THB 6-10							a,b			a	a	a,b			a,b	a,b	a,b	a	a	
	THB 11+						a	a,b	a		a		a,b			a,b	a,b	a,b	a	a	a

Results are based on two-sided tests with significance level .05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. This category is not used in comparisons because its column proportion is equal to zero or one.

b. This category is not used in comparisons because the sum of case weights is less than two.

c. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

		Household monthly income ranges (4 ranges)				Marital status					Highest Education							Type of Residence						Level of activeness by behavior		
		THB 50,000 or b	50,001 – 85	35,001 – 16	HB 160,001	Single	arried with k	ried without	erated/wido	rated/widow	ry scool or	hior highsch	Highschool	sociate deg	achelor degr	aster degree	e master de	tached hou	ouse / Twin	condominiun	Apartment	Shoplot	Other	ctive (1-3 a	ly-active (4-	ive (7 action
		Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %	Column N %
Q24 Incremental Price for water bottle made from Biodegradable plastic	Not willing t	45.0%	35.7%	50.0%	36.5%	37.9%	48.4%	52.4%	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%	37.4%	45.7%	100.0%	41.8%	46.7%	44.9%	30.0%	23.8%	50.0%	51.4%	37.0%	34.0%
	THB 1-4	25.0%	26.2%	21.0%	27.9%	24.3%	22.6%	33.3%	50.0%	0.0%	0.0%	0.0%	50.0%	50.0%	26.0%	23.9%	0.0%	24.2%	24.4%	24.5%	25.0%	33.3%	50.0%	20.0%	22.2%	40.0%
	THB 5	25.0%	28.6%	24.2%	19.2%	24.3%	22.6%	14.3%	0.0%	100.0%	0.0%	0.0%	50.0%	0.0%	23.7%	21.7%	0.0%	24.2%	15.6%	18.4%	35.0%	33.3%	0.0%	20.0%	27.8%	16.0%
	THB 6-10	0.0%	9.5%	3.2%	12.5%	10.7%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.2%	7.6%	0.0%	8.8%	13.3%	8.2%	5.0%	0.0%	0.0%	7.1%	11.1%	4.0%
	THB 11+	5.0%	0.0%	1.6%	3.8%	3.0%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	1.1%	0.0%	1.1%	0.0%	4.1%	5.0%	9.5%	0.0%	1.4%	1.9%	6.0%
Q25 Incremental Price for coffee cup made from Biodegradable plastic	Not willing t	40.0%	38.1%	46.8%	33.7%	35.5%	51.6%	42.9%	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%	35.9%	43.5%	0.0%	44.0%	42.2%	38.8%	25.0%	19.0%	50.0%	51.4%	35.2%	28.0%
	THB 1-4	25.0%	26.2%	21.0%	12.5%	17.2%	16.1%	19.0%	50.0%	100.0%	0.0%	0.0%	50.0%	50.0%	18.3%	16.3%	100.0%	18.7%	15.6%	20.4%	25.0%	9.5%	50.0%	20.0%	15.7%	22.0%
	THB 5	20.0%	26.2%	22.6%	33.7%	27.8%	29.0%	38.1%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	29.0%	27.2%	0.0%	26.4%	24.4%	26.5%	35.0%	42.9%	0.0%	18.6%	32.4%	32.0%
	THB 6-10	10.0%	9.5%	8.1%	13.5%	14.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.2%	9.8%	0.0%	7.7%	15.6%	10.2%	10.0%	19.0%	0.0%	7.1%	13.0%	12.0%
	THB 11+	5.0%	0.0%	1.6%	6.7%	4.7%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	3.3%	0.0%	3.3%	2.2%	4.1%	5.0%	9.5%	0.0%	2.9%	3.7%	6.0%

Comparisons of Column Proportions[c]

		Household monthly income ranges (4 ranges)				Marital status					Highest Education							Type of Residence						Level of activeness by behavior		
		THB 50,000 or below	THB 50,001 – 85,000	THB 85,001 – 160,000	THB 160,001+	Single	Married with kids	Married without kids	Divorced/seperated/widowed with kids	Divorced/seperated/widowed without kids	Primary scool or below	Junior highschool	Highschool	Associate degree	Bachelor degree	Master degree	Above master degree	Detached house	Townhouse / Twin house	Condominium	Apartment	Shoplot	Other	Less-active (1-3 actions)	Moderately-active (4-6 actions)	Highly-active (7 actions or more)
		(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)	(E)	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(A)	(B)	(C)	(D)	(E)	(F)	(A)	(B)	(C)
Q24 Incremental Price for water bottle made from Biodegradable plastic	Not willing to pay any									a,b	a,b	a,b	a				a,b									
	THB 1-4									a,b	a,b	a,b					a,b									A
	THB 5								a	a,b	a,b	a,b		a			a,b						a			
	THB 6-10	a						a	a	a,b	a,b	a,b	a	a			a,b					a	a			
	THB 11+		a					a	a	a,b	a,b	a,b	a	a			a,b		a				a			
Q25 Incremental Price for coffee cup made from Biodegradable plastic	Not willing to pay any									a,b	a,b	a,b	a				a,b							C		
	THB 1-4									a,b	a,b	a,b					a,b									
	THB 5								a	a,b	a,b	a,b		a			a,b						a			
	THB 6-10						a	a	a	a,b	a,b	a,b	a	a			a,b						a			
	THB 11+		a					a	a	a,b	a,b	a,b	a	a			a,b						a			

Results are based on two-sided tests with significance level .05. For each significant pair, the key of the category with the smaller column proportion appears under the category with the larger column proportion.

a. This category is not used in comparisons because its column proportion is equal to zero or one.

b. This category is not used in comparisons because the sum of case weights is less than two.

c. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

APPENDIX L

Comparison of means between groups and Significant Testing of 'Positive image change towards company/brand that uses Biodegradable plastic as their product packaging' by demographic groups

		Gender	Q4_AgeRange				Personal monthly income ranges (4 ranges)			Marital status					Type of Residence							Level of activeness by behavior		
	Total	Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	THB 30,000 or below	THB 30,001-60,000	THB 60001-100000	THB 100,001+	Single	Married with kids	Married without kids	Divorced/seperated/widowed with kids	Divorced/seperated/widowed without kids	Detached house	Townhouse / Twin house	Condominium	Apartment	Shoplot	Other	Less-active (1-3 actions)	Moderately-active (4-6 actions)	Highly-active (7 actions or more)
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
If a manufacturer/brand uses bidodegredable plasctic as their product packaging, how will your impression change towards that manufacturer/brand?	4.02	3.92	4.05	4.06	3.92	4.04	3.89	4.03	4.18	3.95	4.04	3.90	4.00	4.00	4.00	4.08	3.98	4.10	3.70	4.00	3.50	3.81	4.08	4.16

Comparisons of Column Means[b]

		Gender	Q4_AgeRange				Personal monthly income ranges (4 ranges)			Marital status					Type of Residence							Level of activeness by behavior		
		Male	Female	Younger age group (Until 29 yrs old)	Middle age group (30-39 yrs old)	Older age group (40+)	THB 30,000 or below	THB 30,001-60,000	THB 60001-100000	THB 100,001+	Single	Married with kids	Married without kids	Divorced/seperated/widowed with kids	Divorced/seperated/widowed without kids	Detached house	Townhouse / Twin house	Condominium	Apartment	Shoplot	Other	Less-active (1-3 actions)	Moderately-active (4-6 actions)	Highly-active (7 actions or more)
		(A)	(B)	(A)	(B)	(C)	(A)	(B)	(C)	(D)	(A)	(B)	(C)	(D)	(E)	(A)	(B)	(C)	(D)	(E)	(F)	(A)	(B)	(C)
If a manufacturer/brand uses bidodegredable plasctic as their product packaging, how will your impression change towards that manufacturer/brand?															.[a]								A	A

Results are based on two-sided tests assuming equal variances with significance level .05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. This category is not used in comparisons because the sum of case weights is less than two.

b. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

APPENDIX M

Cross tabulations and Significant Testing of demographic data by Purchase Intention Change Intensity

		Q23 Top Box	
		TopBox	Bottom 4
		Column N %	Column N %
Gender	Male	16.7%	24.5%
	Female	83.3%	75.5%
Q4_AgeRar	Younger age group (Until 29 yrs old)	55.6%	49.5%
	Middle age group (30-39 yrs old)	27.8%	27.6%
	Older age group (40+)	16.7%	22.9%
Province of	Other	0.0%	0.0%
	Bangkok	91.7%	82.3%
	Nonthaburi	5.6%	9.4%
	Pathum Thani	0.0%	4.2%
	Samut Prakan	2.8%	4.2%
Occupation	Other	0.0%	0.0%
	Student	8.3%	5.2%
	Employee of private company	63.9%	62.0%
	Civil Servant (government sector)	5.6%	6.8%
	Specialized professional (i.e. doctor,	2.8%	3.1%
	Farmer	0.0%	0.0%
	Business owner	8.3%	13.0%
	Freelance/self-employed	0.0%	6.8%
	Skilled workers (i.e. mechanics, tecn	0.0%	0.0%
	Non-skill workers (i.e. factory worker	0.0%	0.0%
	Contractors	2.8%	0.0%
	Housewife/husband	2.8%	.5%
	Retired	2.8%	.5%
	Unemployed	2.8%	2.1%
Personal m	THB 30,000 or below	27.8%	28.6%
	THB 30,001-60,000	38.9%	41.1%
	THB 60001-100000	27.8%	21.4%
	THB 100,001+	5.6%	8.9%
Household	THB 50,000 or below	8.3%	8.9%
	THB 50,001 – 85,000	11.1%	19.8%
	THB 85,001 – 160,000	36.1%	25.5%
	THB 160,001+	44.4%	45.8%
Marital stat	Single	86.1%	71.9%
	Married with kids	8.3%	14.6%
	Married without kids	2.8%	10.4%
	Divorced/seperated/widowed with kid	2.8%	2.6%
	Divorced/seperated/widowed without	0.0%	.5%
Highest Ed	Primary scool or below	0.0%	0.0%
	Junior highschool	0.0%	0.0%
	Highschool	0.0%	1.0%
	Associate degree	2.8%	.5%
	Bachelor degree	50.0%	58.9%
	Master degree	47.2%	39.1%
	Above master degree	0.0%	.5%
Level of act	Less-active (1-3 actions)	13.9%	33.9%
	Moderately-active (4-6 actions)	52.8%	46.4%
	Highly-active (7 actions or more)	33.3%	19.8%

Comparisons of Column Proportions[b]

		Q23 Top Box	
		TopBox	Bottom 4
		(A)	(B)
Gender	Male		
	Female		
Q4_AgeRar	Younger age group (Until 29 yrs old)		
	Middle age group (30-39 yrs old)		
	Older age group (40+)		
Province of	Other	.[a]	.[a]
	Bangkok		
	Nonthaburi		
	Pathum Thani	.[a]	
	Samut Prakan		
Occupation	Other	.[a]	.[a]
	Student		
	Employee of private company		
	Civil Servant (government sector)		
	Specialized professional (i.e. doctor, ar		
	Farmer	.[a]	.[a]
	Business owner		
	Freelance/self-employed	.[a]	
	Skilled workers (i.e. mechanics, tecnici	.[a]	.[a]
	Non-skill workers (i.e. factory worker, n	.[a]	.[a]
	Contractors		.[a]
	Housewife/husband		
	Retired		
	Unemployed		
Personal m	THB 30,000 or below		
	THB 30,001-60,000		
	THB 60001-100000		
	THB 100,001+		
Household	THB 50,000 or below		
	THB 50,001 – 85,000		
	THB 85,001 – 160,000		
	THB 160,001+		
Marital stat	Single		
	Married with kids		
	Married without kids		
	Divorced/seperated/widowed with kids		
	Divorced/seperated/widowed without k	.[a]	
Highest Ed	Primary scool or below	.[a]	.[a]
	Junior highschool	.[a]	.[a]
	Highschool	.[a]	
	Associate degree		
	Bachelor degree		
	Master degree		
	Above master degree	.[a]	
Level of act	Less-active (1-3 actions)		A
	Moderately-active (4-6 actions)		
	Highly-active (7 actions or more)		

Results are based on two-sided tests with significance level .05. For each s

a. This category is not used in comparisons because its column proportion i

b. Tests are adjusted for all pairwise comparisons within a row of each inne

BIOGRAPHY

Name	Mr. Roongthumruang Nuangjakchim
Date of Birth	May 24, 1991
Educational Attainment	2013: International Management, Ritsumeikan Asia Pacific University (Oita, Japan)