EXPLORING IMPACT PF SNACK'S FRONT-OF-PACK NUTRITION LABEL ON YOUNG ADULT CONSUMPTION CHOICES

BY

MISS CHUDVAROON WEANGSONG

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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was approved as partial fulfillment of the requirements for
the degree of Master of Science Program in Marketing (International Program)

on 6 JUN 2016

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ABSTRACT

Obesity and overweighed population are increasing around the world. World health organization (WHO) and Food and drugs administration (FDA) were introducing the Front-of-pack nutrition label (FOPs) or label that show nutrition and portion of nutrient inside package, with the belief that it will help capture attentions and influence consumers to select good food choice. As there is no single format for the FOPs, producers and organizations in each country are developing their own FOP labels and instead of helping consumer, the labels confuse the consumers. The FOPs can be grouped into three types based on its main characteristic which are numbers, colors and symbols.

Hence, this report aims to explore the type of FOPs that are being used in Thailand and also the attitude and usage of young adult consumers toward the FOPs and the food product that has FOPs on. And in the end to be able to recommend a better design of FOPs that suitable for Thai consumers. The research methodology consists of qualitative to find the insight or attribute that effect to the design and to affirm, and quantitative method to affirm the insight gains from qualitative study.

From research findings respondents could be divided into three group by using level of nutrition label understanding, and named from high to low level as Pro, Starter and Carefree group accordingly. For reading habit, it can observed that Pro and Starter group were reading nutrition label a lot more than the carefree group as they normally read every time they buy food. And for

total respondent, area that people most concerned was calories, following by sugar and fat. Respondents also agreed that FOPs was easier to understand than NFP but least agreed on the idea that FOPs could make them pay higher for snack.

For the FOPs design, result indicated that FOPs with color could draw attention than those without color whether there was word or no word containing. Moreover, it also founded that the FOPs could be used as a trusted mark for any new snack brands, as snack with FOPs could gain more creditability.

Keywords: Front-of-pack nutrition label, Attitude toward Front-of-pack nutrition label, Attitude toward snack that has Front-of-pack nutrition label

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Symbols/Abbreviations	Terms
FOPs	Front-of-pack nutrition label
NFP	Nutrition fact panel

CHAPTER 1
INTRODUCTION

1.1 Introduction to the study

Nowadays number of people who has obesity disease is surging around the globe and the main reason comes from the most common thing, food. Much of food we consume each day contains high sugar, fat and sodium and most of the time we consume without knowing actual ingredient. Some people may argue that there is a table that summarizes ingredient details on the back of food package called Nutrition Fact Panel (NFP). However, a number of studies found that the NFP is difficult to understand and most of them are not successful in capturing attention (Graham DJ and Jeffery RW, 2011) thus; the front-of-pack nutrition label has introduced.

The front-of–package nutrition label (FOPs) or that also called 'fact up front' was introduced and encouraged usage by US FDA throughout the world, with main objectives of helping consumer to be aware of their food choice from first glance. Thailand FDA also join the campaign by introducing FOPs with Guideline Daily Amounts (GDA) since 2011 and implement to five groups of snack foods such as fried or baked popcorn, rice crisps or extruded snacks, crackers or biscuits, filling wafers and fried or baked potato chips (Thailand FDA, 2010) where filling wafers and fried or baked potato chips will be largely focused in this study.

1.2 Objectives

This study is a contemporary topic in applied marketing in society subject area with 4 main objectives:

1.2.1 To explore type of front-of–package nutrition label (FOPs) that is being used on snack packaging in Thailand.

1.2.2 To measure young adult consumer's attitude toward FOPs and understand their FOPs usage.

1.2.3 To study the effect of FOPs on consumer perception toward product i.e. healthiness, qualities, price and willingness to pay.

1.2.4 To recommend the most effective front-of–package nutrition label that will catch attention and help consumers to choose healthy food.

1.3 Project Scope

Sources of data were secondary and primary data that gathered from in-depth interviews and quantitative through an online survey. Target respondents were young adult women and men consumers' age between 20-30 years old in Thailand who have consumed fried or baked potato chips within three months.

Important questions that this study aims to answer were: What is consumers' attitude toward FOPs, how does front-of–pack nutrition label make consumers change their perception about that food product, will front-of–package nutrition label make consumers change their behavior toward that food product. And what type of FOPs that capture consumer attention most.

Key variables of the study were 1) consumers' character such as age, gender, chronic disease and front-of-pack nutrition label usage behavior 2) consumers' understanding level about front-of-pack nutrition label 3) front-of–pack nutrition label design

CHAPTER 2
REVIEW OF LITERATURE

2.1 Review of background and types of FOPs in other countries.

The article by Tarabella and Voinea (2013) that study about an advantages and limitations of the front-of-package nutrition label (FOPs) labeling system in guiding the consumers' healthy food choices mainly focuses on 2 types of FOPs which were traffic lights (TL) and Guideline Daily Amounts (GDA) nutrition label system that widely used in Europe union by indicated advantages and limitations of each system. The traffic lights system (TL) uses color coding of traffic lights to warn consumers about the proportion of each contents on the label. The advantage of TL system was that it was easily to catch attention; however, there were some critics about its unclear details as TL shows only color so it will be difficult when consumer need to compare between products. Unlike GDA system that can give clearer details about how much energy and nutrients are present in a portion of food this is because GDA is intended to guide consumers on maximum amount of certain nutrient that they should consume daily. However, the details on GDA label require some level of education to understand all the numbers. Following to the review of both FOP nutrition systems, Tarabella and Voinea also gave advice on an optimal FOP system in their opinion as the FOP system should be 1) able to attract consumers' attention, 2) able to adapt to current dietary guideline and public health policy, 3) able to suggest amount of consumption and 4) able to guide whether the food contain reasonable amount components that harmful to health.

2.2 Review of consumer usage of FOPs.

After a few years of implementing front-of-pack nutrition label system, Department of health and ageing of USA's report (2013) have conducted a research to identify the optimal FOPs design that matches consumer's behavior by using qualitative method. According to research methodology, there were 15 focus groups conducted in different area around the country, each focus group was asked about their shopping behavior, factor influence to their food choices, also to define the healthy food by key

words on packaging and current usage of nutrition label. These questions can point out the mismatch between the real usage and current of FOPs. Findings shown that with current FOPs that widely used in the world, for most nutritionally educated (those who are already using nutrition panel information to make choices) FOPs was not helpful while few people can feel that FOPs helps them make faster decision and many consumers still select food choice based on their existing knowledge. The optimal FOPs design that research proposed was star rating (which can be compared with traffic lights system in UK's standard) as it was easy to understand. However, the FOPs design alone cannot catch attention so government must be involved and help spread the campaign.

2.3 Review of consumer response to the launch of FOPs.

To investigate reaction of Front-of-Package nutrition label, Huang, R., & Zhu, C. (2013) conducted research that not only finding consumer and producer responses to front-of-package nutrition labeling (FOPs), but also developed demand model that could guide producer on pricing and advertising strategies based on consumer responses or the demand for each of 5 scenarios for FOPs on cereals product. Outcomes indicated that the scenario of FOPs that shown only calories and promoted nutrients could help generate highest demand and price, firm could get more profit from this FOP scheme but the label itself might fail to deliver its main purpose to make consumer aware of food healthiness.

Among several studies of three main FOPs systems including traffic lights or color, fact base or numbers and symbol, that have been studied, Smart choice is one of symbol labeling system that widely used especially on cereals and was studied by Christina A and team in 2012. The research was conducted to evaluate impact of smart choice on consumption portion of cereals and other perceptions regarding the cereals. In doing so, researchers gave participants the cereals with three different FOPs conditions which were box of cereal without label, box with original smart choice label that provide serving per package and box with modified label that provide serving size. The study outcome indicated that smart choice label had no impact on participants' perception about sugar contain, taste, portion of cereal intake and intention to purchase. However, there's some different about healthfulness perception among three labels as cereal with smart choice label on package was perceived healthier than the no label one.

Apart from Smart choice symbol, “Low-Fat” is another symbol that frequently used by snack or wafer product, so Wansink and Chandon (2006) set up a study to find whether the ‘low fat’ symbol will impact consumer perception and behavior. Instead of increase awareness of amount of food intake, the study founded that “low fat” symbol makes consumer feel less guilty when they choose food and likely to increase amount of food intake per meal which, in the end, leads to unhealthiness consumption. In this study, Wansink and Chandon set up three experiments to find out three main assumptions which were ‘Does “low-fat” sign increase consumption and why, and can serving- size label reduce the effect of “Low-fat” label?. For the first assumption, they set up an experiment by asking respondents to come to university’s activities and set up the M&M booth that provide unlimited M&M chocolate with the sign ‘low-fat’. All respondents were asked to measure the amount of M&M they consumed after the activities in calories unit. For second assumption, respondents were asked to evaluate the appropriate serving size of “Low-fat M&M” for typical person and for them. From this experiment, it was founded that most respondents consider the “Low-fat M&M” as lower in calories and feel less guilty to increase serving size. And finally, they did the survey to find if serving- size label reduce the effect of “Low-fat” label and founded that serving-size information prevented normal-weight people from overeating foods labeled as low fat did not influence overweight people.

Although there are three FOPs systems for company to use, but in some studies said each of the system was not giving the most effective effects. So researcher tried to design and do experiment to find out the best combination of those three systems. According to J Koenigstorfer and team (2013), It was stated that the main objective of front of pack nutrition label (FOPs) was to give symmetry information between producer (of snack) and consumer about nutrition contain in the product and also to encourage consumer to take more attention to food nutrient. However, the variety of label system caused consumer confusion and made them ignore the label. This study was an experimental laboratory study that used eye-tracking technology with 160 respondents, to measure the attractiveness of FOPs between color code (traffic lights) and health mark (single symbol). The experimental designed of FOPs was made of combination between color code and health mark, and their interaction effects on gaze duration and frequency.

The result indicated that the FOPs combination of color code without health mark affects the longer gaze duration and gaze frequency. However, in choosing the healthy food choices, the presence of both health mark and color coded were important.

2.4 Review of research methodology

Researcher reviewed study of Miller and team to find the concept and research methodology in doing online experiment (2015). The research was conducted via online survey with eye tracking technology, to investigate that whether the front-of-package nutrition label could misled the true about product healthiness. The eye tracking was used to get more understanding about level of each of content on the label that affects consumer decision making. Miller's research founded that some information such as calories and fat got more attention and misled to an unhealthy choice of product, this correlation was even higher in people with less nutrition knowledge.

Becker and colleagues were want to test the impact of Front-of-pack nutrition labels (FOPs) (2015) whether it can capture attention more or less than the original nutrition fact panel (NFP) on the back side of package. The study also tried to identify the characteristic of the label that easy to catch consumers' attention. In this study they used change detection technology where respondents were asked to see package, with and without FOPs, and detect the difference between pictures. They also showed the package with variety type of FOPs, and then measured minutes that respondents took to detect the difference. The result was obvious, as it showed that FOPs could grasp more attention than NFP and FOPs with colored could grasp attention more than those FOPs with icon.

In addition to the design, another part to be concerned on FOPs was nutrition factor. The study from Hall and partners (2013) was conducted to test those key findings from previous research that tried to understand consumer's insight about using FOPs. The way they measured impact of FOP label was interesting as they mocked up the shelf displayed of food product across 6 categories and asked respondent to shop those product via online screen. Their findings suggested that FOPs would impact shopping behavior in some categories i.e. cereal fiber with FOPs that indicated high % of fiber helps increase over 26% of purchase volume.

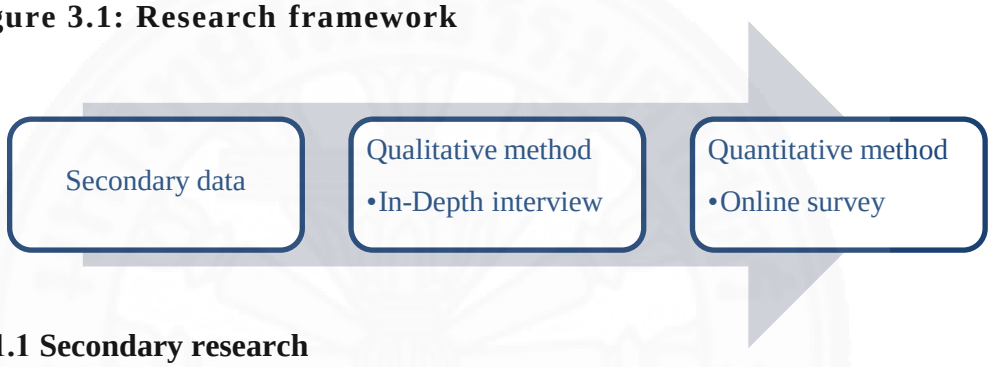
In summary from all literature reviewed, it was founded that there are many types of FOPs system that that being implemented in many countries now. And in a number of cases those different types made a lot of confusions to customers. The studies in most countries have tried to suggest the most effective design of FOPs, but the study results only fit with customer's behavior in each country. According to the review, the most potential design for effective FOPs is color coding which never been used in Thailand before (except for the imported snack). So in this study color code was used in an experiment together with wording form that currently being used now in Thailand, to find the most effective FOPs design for Thais consumer.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Research design

Main sources of data for analysis in this research came from secondary data and primary data through both quantitative through an online survey and qualitative through in-depth interview (Refer to Figure3. 1 shown below).

Figure 3.1: Research framework



3.1.1 Secondary research

Secondary research was conducted to find type of front-of–package nutrition label (FOPs) that currently being used on snack packaging in Thailand, by gathered information mainly from website and research papers such as; Institute of medicine and Thailand's FDA website and publish report. Literature review: Academic journals, research paper and publish report regarding consumer behavior toward FOPs.

Qualitative research was conducted through in-depth interview to find understand current behavior toward FOPs, the usage of FOPS and also the insight about effect of FOPs on consumer perception toward product i.e. healthiness, qualities, price and willingness to pay.

Questionnaire survey was designed based on attribute from depth interview. The objectives of questionnaire survey was to measure awareness of FOPs among young adult consumer, to reassure the effect of FOPs on consumer perception toward product i.e. healthiness, qualities, price and willingness to pay that have been discussed in depth interview. And to identify the most effective front-of–package nutrition label that would catch attention and help consumer to choose healthy food.

The questionnaire was pilot-tested with 10 sample respondents to avoid omission, complexity and loaded-question. There was screening questions along with the 'skip-option' in questionnaire in order to sort out respondent who were not qualified. Online surveys were distributed through all channels including the Facebook fan pages and google form (online survey creating by google).

3.1.2 In-depth interview

Qualitative data was collected from in-depth interview with target respondents: Thai women and men consumers' age between 20-30 years old who have consumed fried or baked potato chips within 3 months to define attributes for questionnaire for quantitative part.

3.2 Descriptive research methodology

After researcher gained insight information from in-depth interview, the information was used to draft and adjusted into questionnaire. The questionnaire was designed to have four parts which are screening, main, experiment, and demographic. Before launching on field, the questionnaires were pilot and distributed to gather the information to help ensure the result from qualitative part. Result from questionnaire, was used to quantify results that researcher gained from the in-depth interview into percentages and figures.

3.3 Identification of key research variables

According to information that researcher obtained from in-depth interview, the conceptual framework of dependent and independent variable were created as below *(See table 3.1).* As the main goal of having FOPs is to create awareness to consumers about food and nutrition that they are about to consume, so consumer's attention on FOPs was set as dependent variable. The independent variables were included:

- Consumers' characteristic: age, gender, education, exercise habits and nutrition label understanding level.
- Current FOPs usage among consumers: nutrition reading habits (how often people read the label), important factor in buying snack and area that people normally concern on FOPs.

- Consumers' attitude toward FOPs: about attractiveness, easy to understand, FOPs helps increase perceived quality of snack, FOPs helps increase brand creditability and willingness to pay.
- FOPs design: FOPs that has word indicate high, med, low level of each nutrition factor on FOPs, and color indicate level of each nutrition factor.

Table 3.1: Research variable in quantitative analysis

Variable	Research variable
Dependent	• Consumers' attention on FOPs
Independent	• Consumers' characteristic • Current FOPs usage among consumers • Consumers' attitude toward FOPs • FOPs design

3.4 Sampling procedure

Both qualitative and quantitative were designed to use convenience samples in order to obtain information in limited time frame. All respondents are Thai men and women who recently buy snack within 1 month, having age between 18-25 years old (generation Y) and 26-35 years old (generation X), and knowing what the FOPs is.

3.4.1 Sample size

Sample size for an in-depth interview was five women who ages of 18-25 years old and 26-35 years old. The data collection period was on October 2016.

Sample size for survey was two hundred men and women who ages between 18-25 years old (generation Y) and 26-35 years old (generation X). The data collection period was on February - March 2016.

3.4.2 Survey acquisition and recruiting plan

In arranging in-depth interview, researcher recruited all respondents by using personal contact. Each respondent received whole wheat snack as an incentive. All

respondents had to pass the screening question at the beginning and were considered as "target respondents"

For the survey, questionnaires were distributed to two hundred respondents through online channels. The online questionnaires were created by using the "Google Forms" web page. The questionnaires were distributed through researcher personal contacts' contacts: in universities, families and work places that have certain criteria that fit to be target respondent.

3.5 Data collection

3.5.1 In-depth interview

In-depth interview was conducted by face-to-face with total respondents of five women who ages of 18-25 years old and 26-35 years old, recently bought a snack within 1 month and knowing what the FOPs is *(See Appendix A: In-depth interview question guide).* The interview conducted at the place where interviewer is convenient. The length of time to complete the In-depth interview was about 15 minutes for each respondent.

3.5.2 Survey

The questionnaire was distributed by using the convenience methods through the online channels such as Facebook message, email and through chat messaging application such as LINE *(See Appendix B: Survey).* The total respondents are two hundred people. The length of time used to finish questionnaire of each target respondent is about 5 minutes. Questionnaire was divided into 4 parts as the following:

- Part 1: Screening questions
- Part 2: Main questions
  - Nutrition label usage
  - Measuring attitude toward FOPs alone and snack that has FOPs
- Past3: Evaluation of each FOPs that have been recommended by researcher
- Part 4: Demographic

Part 3 of questionnaire was divided into four types to cross test between words effect on FOPs and color effects *(See Appendix C: Recommended FOPs)*, according to the fourth objective to find out the most applicable FOPs that fits with young adult in Thailand.

3.6 Data analysis

The In-depth interview was conducted to find consumer insight to match objective of research and be able to identify key factors that affect the attitude about FOPs to use to conduct survey.

The questionnaire was conducted to ensure result that received from qualitative part (The In-depth interview). Before analyzing the data, the questionnaire result was screened, cleaned and coded into SPSS format in order to enter into SPSS program for further analysis. Data was interpret by using SPSS and focused on frequencies, means, descriptive and other appropriate statistical analysis.

CHAPTER 4
RESULTS AND DISCUSSION

4.1 Data analysis

To collect qualitative and quantitative data, researcher used both in-depth interviewer and survey. Finding from in-depth interview was used to identify key factor and questions in questionnaire survey. The survey was distributed through online channel like Facebook messenger and via chat application like LINE. Total respondent from survey were two hundred people, all of their results were screened, cleaned and coded to enter into SPSS program. The main functions in SPSS that used to analyze data were one way ANOVA, General linear model, descriptive and mean statistic tools.

4.2 Results from exploratory research

4.2.1 Secondary research result

4.2.1.1 Overview of Front-of-pack nutrition label usage

Nutrition label that being used in Thailand now are having two forms, the first form is called nutrition fact panel or full nutrition label that presence on the pack of the package. The second form is front-of-pack nutrition label (FOPs) or the summary of nutrition fact on the back. FOPs was first implemented to Thai's snacks in 2011 following to Thailand Food and drug administration department announcement. According to announcement, there are five groups of snack foods that have to apply FOPs on their package such as fried or baked popcorn, rice crisps or extruded snacks, crackers or biscuits, filling wafers and fried or baked potato chips (Thailand FDA, 2010). The form of FOPs that being used is called GDA format or equal to fact base system in other countries, information on FOPs composed of four parts. The first part is number indicating nutrition portion per one consuming unit; second part is indicating the recommended times for consuming per one package, third part is portion of each nutrient that contain in this package, and fourth part is percentage of each nutrient per one package.

4.2.2 In-depth interview result

The study was started from qualitative part, in order to find the insight and to develop questionnaire for quantitative part. In-depth interview of six respondents were collected and report as qualitative finding as below:

Total respondents were female age between 25-27 years old which were considered as generation Y. From demographic and characteristic all respondent can be divided into two sides, the seller and consumers' side. The seller was one respondent who is 27 years old and working as marketing manager at whole wheat snack brand, she was recruited because she is making snack and she also consider herself as diet conscious person. So her opinion can help researcher see the perspective from the brand side.

In the eye of seller or snack brand, they saw that FOPs has an impact over product for consumers that have low nutrition knowledge level. Because they concern about nutrition factor on label like sodium and sugar more than fact that snack was made from whole wheat, while people who really know about the nutrition would read the nutrition label on the back which gave full information about snack nutrition.

On the consumer side, respondent can be divided into subgroup of two types; **a serious consumer and easy eating consumer**. The first group was consisted of respondent who is an entrepreneur of logistic company and flight attendance. They were both considered themselves as diet conscious person. They are normally read FOPs every time they buy food and exercise 3times per week. As a serious consumer, they were generally preferred to read nutrition fact panel (NFP) on the back of the product and read through the ingredients before buying food product in every category.

One thing they mentioned was that the FOPs did not give her much information, thus they like already read the NFP on the back instead. And since they normally use nutrition label on the back so the FOPs did not impact their perception about product inside package, and also didn't change their behavior or the number of time they consume snacks. Factor used for food selection were healthiness, WOM, taste and brand.

The other group of respondent in consumer' side was those who work as an employee, all three work as creatives and media planner. Most of the time in their

working hours, they have to sit down on table and do not have much time for proper meal. They rarely do exercise at less than three times per week. When asking about the FOPs, all of them ever notice the FOPs but none of them know exactly how to read the label and they also do not know the meaning of each percentage. Normally they don't use the nutrition info or FOPs, as they don't have time to read. And somehow the FOPs made them feel like this snack have been approved for its food safety so they can have FOPs stamped on. As a result this could indicated that snack that has FOPs should be safe to consume.

In summary, researcher founded that FOPs is important for those who have low or limited nutrition label understanding level as it give them a short summary of NFP. However, most of respondents see that the FOPs that is being used in Thailand now is complicated to read and understand. And for those who have high understanding of nutrition label, they think that FOPs gives them too little information when compare to the NFP on the back.

4.3 Results from descriptive research: survey

4.3.1 Summary of respondent profile

Data that have been collected by survey method was analyzed by using Statistic Package for Social Sciences (SPSS). From two hundred respondents there were 70% female, 57% who ages between 18 to 25 years old, 55% of all respondents were holding bachelor's degree as the highest education level, and most of them were working as employees at about 48%. When looking at exercise habits, about 79% said that they doing exercise 0-3 times per week, they also claimed that they could understand all of information on nutrition fact panel or that was called the full nutrition label *(See table 4.1)*.

Table 4.1: Summary of Respondents' Demographic (n = 200)

Respondents' Demographic		n	%
Gender	Female	140	70%
	Male	60	30%
Ages	age between 18 to 25 years old	114	57%
	age between 26 to 35 years old	86	43%
Education	Bachelor's degree	109	55%
	Master's degree	88	44%
	Lower than Bachelor's degree	2	1%
	Higher than Master's degree	1	1%
Occupation	Employees	95	48%
	Entrepreneur	35	18%
	Student	31	16%
	Freelance	18	9%
	Government officers	18	9%
	Veterinarian	2	1%
	Researcher	1	1%
Exercise	0-3 times a week	157	79%
	4-5 times a week	41	21%
	Everyday	2	1%
Nutrition label understanding level	High	84	42%
	Low	71	36%
	Medium	45	23%

In term of diet conscious, respondents were asked to rate level of their diet conscious via one to five likert scales and the means from all respondent is about 3.9. The differences of means can be founded between groups of people who have difference nutrition knowledge level as the means of people with high and medium level were higher than people with low understanding level *(See table 4.2)*.

Table 4.2: Means of diet conscious among level of nutrition understanding

Diet conscious level			
Understanding label	Mean	N	Std. Deviation
High	4.17	84	1.139
Medium	4.27	45	.618
Low	3.39	71	.933
Total	3.92	200	1.041

A one-way ANOVA was conducted to compare between groups of people who has high, medium and low nutrition label understanding on diet conscious factor. It was founded that there was a significant different between groups at p<.05 levels for the conditions [F (2,197) =16.00, p =0.000] *(See Appendix D: The differences of diet conscious level between people who has high, medium and low nutrition label understanding).* Together with post hoc comparisons using the Tukey HSD test indicated that the means score of those who have low level of understanding was significantly different from group of high and intermediate understanding level.

Moreover, according to research hypothesis that people with high nutrition knowledge level would have high diet conscious also, so A Pearson product-moment correlation coefficient was computed to assess the relationship between these variables. The output shown that there was a positive correlation between people with high and medium nutrition knowledge level, and diet conscious as r = .206, n = 200, p = 0.003 for high knowledge group and r = .183, n = 200, p = 0.01 for medium knowledge group. While there was a negative correlation for people with low nutrition knowledge level as r = -.372, n = 200, p = 0.000. In summary, the increase of nutrition knowledge level was correlated with high diet conscious *(See Appendix E: Association between diet conscious and level of nutrition label understanding).*

By using nutrition label understanding level, respondent can be divided into three subgroups; people with high understanding were called '**Pro**', people with medium level were called '**Starter**' and people with low level were called '**Carefre**e' *(See table 4.3).*

The Pro group was considered as having high understanding of nutrition label because they can read and understanding all details in NFP or the full version of nutrition label, this group of people also read nutrition label every time they buy food at about 83% and having high education level as 50% of the group are having Master's degree.

The Starter group was people who do not understand NFP; still they can understand all elements on FOPs. Their overall profile looked similar to the Pro group in term of exercise habit and education level. This group was called as starter because even they have not much understanding in NFP but they were starting to read nutrition label by

start reading FOPs. However, only 50% of this group that read nutrition label every time they buy food and about 24% were read only when they have much time.

The Carefree group was simply the people, who do not understand NFP and understand only some elements on FOPs. They rarely do exercise as 90% said they do exercise less than 3 times per week. The Carefree also named like this because only 19% that read nutrition label every time they buy food. Moreover, 66% of the group were holding bachelor's degree which was in the lower level when compared to the other two groups.

Table 4.3: Groups of nutrition label understanding

Nutrition label understanding level							
		High = Pro		Medium = Starter		Low = Carefree	
		N	N %	N	N %	N	N %
Gender	Female	57	**67.9%**	30	**66.7%**	53	**74.6%**
	Male	27	32.1%	15	33.3%	18	25.4%
Exercise	everyday	2	2.4%	0	.0%	0	.0%
	4-5 times per week	23	27.4%	11	24.4%	7	9.9%
	0-3 times per week	59	**70.2%**	34	**75.6%**	64	**90.1%**
Read FOPs	Every time I buy food	70	**83.3%**	23	**51.1%**	14	19.7%
	Only when I have much time	14	16.7%	11	24.4%	45	**63.4%**
	Never	0	.0%	11	24.4%	12	16.9%
Education	lower than Bachelor's degree	1	1.2%	0	.0%	1	1.4%
	Bachelor's degree	40	47.6%	22	48.9%	47	**66.2%**
	Master's degree	42	**50.0%**	23	**51.1%**	23	32.4%
	Higher than Master's degree	1	1.2%	0	.0%	0	.0%

4.3.2 FOPs usage

To understand front-of-pack nutrition label usage among respondents, respondent was asked the factor that influences them on buying snack, the frequency of using or reading the FOPs and the area that they usually concern on FOPS. According to survey, taste was chosen to be the most important factor for buying snack [means = 4.65], following by brand of snack [means = 3.94], quality [means = 3.8], package [means = 3.74] and price [means = 3.29] (*See table 4.4).*

Table 4.4: Important factor for buying snack

Important factor for buying snack					
	N	Minimum	Maximum	Mean	Std. Deviation
Taste	200	1	5	4.65	.648
Brand	200	2	5	3.94	.688
Quality	200	1	5	3.80	.768
Package	200	2	5	3.74	.753
Price	200	1	5	3.29	1.194

Among groups of difference nutrition understanding level, a one-way ANOVA showed that there was a significant different between groups in term of quality factor at $p<.05$ levels for the conditions [$F(2,197) = 3.19$, $p = .043$] and taste at $p<.05$ levels for the conditions [$F(2,197) = 3.95$, $p = .021$]. The quality factor was significantly different between starter and carefree, while the taste factor was significantly different between starter and pro *(See Appendix F: The differences of important factor for buying snack between Pro, Starter and Carefree group).*

For the reading habits, more than half of respondent claimed that they always read the nutrition label, either FOPs or NFP, every time they buy food at 53%.

Dwelling down into subgroup of each level of understanding, it was founded that most of people with high and intermediate level of understanding claimed that they read the label every time they buy food at 83% and 51% respectively, while people with low understanding level normally read the label only when they have much time *(See table 4.5).*

Table 4.5: Nutrition label reading habits by subgroup

Level of understanding			
Nutrition label reading habits	Pro N %	Starter N %	Carefree N %
Every time I buy food	83.3%	51.1%	19.7%
Only when I have time	16.7%	24.4%	63.4%
Never	.0%	24.4%	16.9%

Among five elements on the FOPs, the survey showed that calories is the most concerned area at 88% of respondent claimed, following by sugar at 46%, fat at 45%, sodium at 28% and 26% for saturated fat *(See table 4.6).*

Table 4.6: Most concerned area on FOPs

FOPs element	n	%
Calories	175	88%
Sugar	94	46%
Fat	92	45%
Sodium	58	28%
Sat Fat	53	26%

Comparing between subgroup of nutrition label understanding level, it can be observed that the Pro group generally reading almost every element more than the rest subgroups *(See table 4.7)*. In addition among 5 elements, calorie was the most concerned area as it gained highest percentage in every subgroup. The following was sugar and fat, while sat fat and sodium got the bottom places it can be assumed that most of Thais young adults are not knowing or not having clear understanding about the effects of sat fat and sodium, even the group that was considered as having high level of understanding.

Table 4.7: Most concerned area on FOPs by subgroup

	Level of understanding		
FOPs element	Pro	Starter	Carefree
	N %	N %	N %
Calories	**91.7%**	84.4%	84.5%
Sugar	58.3%	**68.9%**	56.3%
Fat	**53.6%**	**53.3%**	32.4%
Sat Fat	**32.1%**	31.1%	16.9%
Sodium	**44.0%**	26.7%	12.7%

4.3.3 Attitude evaluation

4.3.3.1 Attitude toward FOPs

The attitude toward FOPs was asked in five aspects; attractiveness, easy to understand, importance for buying snack, give more creditability to brand and help increase willingness to pay. From overall respondents, people agreed the most on the idea that FOPs is easier to understand than NFP at means= 4.46, nevertheless people least agreed that FOPs can make them willing to pay higher for snack FOPs at lowest means =3.73. When breaking down into subgroup of nutrition label understanding level it can be

observed that the starter gave more positive attitude towards FOPs than the rest groups as they gave highest means in every aspects *(See Appendix G-a: Compare means of each attitude toward FOPs among nutrition label understanding level).* Together with nutrition label reading habits by subgroup *(See table 4.5)*, it can be assumed that people who actually read or use FOPs are those who frequently read the nutrition label, yet they are not having much understanding in information given on nutrition fact panel or the full nutrition label. So group with intermediate understanding level agreed that FOPs can help them in term of drawing attention, make nutrition label easier to understand, help them makes decision when buying snack, point them which brands are more credible and in summary they are willing to pay higher for the snack that has FOPs.

By applying ANOVA among subgroup of nutrition label understanding level, there were significantly different between the group of Pro and Starter at p= .000 and significantly different between Pro and Carefree at p= .002 for attractiveness factor, these differences pattern also founded in easy to understand factor.

For the important for decision making factor, it can be founded that Starter group see this point significantly different from those Pro and Carefree group as p= .002 and p= .007 respectively. When looking at creditability factor, there were clearly have no difference between three groups founded. And the different only been observed between Starter and Carefree group in the willingness to pay factor *(See Appendix G-b: ANOVA table: Compare means of each attitude toward FOPs among nutrition label understanding level).*

4.3.3.2 Attitude toward snack that has FOPs

When asking about attitude toward snack that has FOPs, overall respondents were agreed that snack that has FOPs is safe to consume as this aspect gained the highest means at 4.88, following by the attitude that FOPs makes the brand more credible at means of 4.77 *(See Appendix H-a: Compare means of each attitude toward snack with FOPs among nutrition label understanding level).* By comparing between subgroup of different nutrition label understanding level, all three groups agreed that snack with FOPs is safe to consume and good for health. However, the similar result given above in attitude toward FOPs also founded, the Starter group mostly agreed to used FOPs and

thought that FOPs is important for them in buying snack, they also agreed that snack with FOPs is more credible and they willing to pay more for the snack with FOPs significantly than other groups *(See Appendix H-b: ANOVA table: Compare means of each attitude toward snack with FOPs among nutrition label understanding level).*

4.3.4 Recommended FOPs

To recommend the most effective FOPs, the researcher has conducted the experiment by dividing respondent into four groups, fifty respondents in each group, and showing four different types of FOPs. Each type of FOPs was evaluated on five aspects which were attractiveness, understanding, perceive quality, creditability and willingness to pay. General linear model was used to analyze the effect of word, color and their interaction effect on each type of recommended FOPs.

4.3.4.1 Attractiveness

It was founded that there was a color effect at p = 0.001 and also interaction effect (word*color) at p = 0.017 *(See Appendix I – a:* Tests of Between-word and color Effects *on Attractiveness, and b: Marginal means of word and color on Attractiveness factor).* Moreover, when comparing the means score it can be seen that means of color was higher than word's either with or without word *(See table 4.8).* And it could be concluded that the effect of color is highest without words, so to make nutrition label that catch attention the most the label should go with color and no word.

Table 4.8: word and color effect on attractiveness

Compare means: word and color on attractiveness				
word	color	Mean	Std. Deviation	N
no word	no color	4.04	1.261	50
	color	5.10	1.374	50
	Total	4.57	1.416	100
word	no color	4.58	1.295	50
	color	4.74	1.337	50
	Total	**4.66**	1.312	100
Total	no color	4.31	1.300	100
	color	**4.92**	1.361	100
	Total	4.61	1.362	200

4.3.4.2 Understanding

In term of understanding, the general linear model showed that there was a color effect at p = 0.004 and interaction effect (word*color) at p = 0.014 *(See Appendix J- a:* Tests of Between-word and color *Effects on understanding, and b: Marginal means of word and color on understanding).* When comparing the means between word and color, it also founded that color factor showed higher means (means = 5.41) than word (means = 5.22), and when combine word and color together it also founded that the FOPs has color but no word had the highest means at 5.56 *(See table 4.9).*

Table 4.9: Compare means: word and color on

Compare means: word and color on understanding				
word	color	Mean	Std. Deviation	N
no word	no color	4.56	1.402	50
	color	5.56	1.163	50
	Total	5.06	1.377	100
word	no color	5.18	1.257	50
	color	5.26	1.397	50
	Total	**5.22**	1.323	100
Total	no color	4.87	1.361	100
	color	**5.41**	1.288	100
	Total	5.14	1.349	200

4.3.4.3 Perceive quality

The testing of between word and color effect from general linear model showed that there is no word, color and interaction effects for the perceived quality aspect, as the significant level is higher than 0.05 at all points *(See Appendix K–a: Tests of Between-word and color Effects on Perceived quality, and b: Marginal means of word and color on Perceived quality factor)* . However, when comparing means of word, color and their combination all together, it can be observed that the mean of word and color are about the same as means for word was at 3.93 and for color was at 3.95. While the highest means was at combination of word and color at means = 3.96. Thus, it might be concluded that although there is no word, color and interaction effect for such aspect, but the combination that will give the highest means for perceived quality aspect is word with color *(See table 4.10).*

Table 4.10: Compare means: word and color on perceived quality

Compare means: word and color on perceived quality				
word	color	Mean	Std. Deviation	N
no word	no color	3.52	1.619	50
	color	3.94	1.671	50
	Total	3.73	1.651	100
word	no color	3.90	.863	50
	color	3.96	1.124	50
	Total	3.93	.998	100
Total	no color	3.71	1.305	100
	color	3.95	1.417	100
	Total	3.83	1.364	200

4.3.4.4 Creditability

In term of creditability factor, it was shown that word had significantly effect on this factor at p = .001 *(See Appendix: L –a: Tests of Between-word and color Effects on Creditability, and b: Marginal means of word and color on Creditability factor)*, while there is no color effect or interaction effect founded. When comparing means, the label that has word also showed higher mean than no word label as the means of label with word in total was at 4.88 and means for no word in total was at 4.27 *(See table 4.11)*.

Table 4.11: Compare means: word and color on creditability

Compare means: word and color on creditability				
word	color	Mean	Std. Deviation	N
no word	no color	4.14	1.340	50
	color	4.40	1.552	50
	Total	4.27	1.448	100
word	no color	4.84	.955	50
	color	4.92	1.291	50
	Total	4.88	1.131	100
Total	no color	4.49	1.210	100
	color	4.66	1.444	100
	Total	4.58	1.332	200

4.3.4.5 Willingness to pay

For willingness to pay, the result showed that there is no word or color effect on this factor and only effect that matters was the interaction effect at p = .003 *(See Appendix: M –a: Tests of Between-word and color Effects on Willingness to pay , and b: Marginal means of word and color on Willingness to pay)*. However, people will willing

to pay more when they see nutrition label that only word or color. According to the compared means table *(See table 4.12)* means of willingness to pay factor was high in case that label has no word with color (means = 4.04) and word without color (means = 4.00).

Table 4.12: Compare means: word and color on willingness to pay

Compare means: word and color on willingness to pay				
word	color	Mean	Std. Deviation	N
no word	no color	3.30	1.502	50
	color	4.04	1.641	50
	Total	3.67	1.608	100
word	no color	4.00	1.443	50
	color	3.48	1.282	50
	Total	3.74	1.383	100
Total	no color	3.65	1.507	100
	color	3.76	1.492	100
	Total	3.71	1.496	200

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

5.1.1 Total respondent profile

From total respondent of two hundred people, more than half of them were female, age between 18 to 25 years old or was considered as generation Y. They rarely do exercise and more than half of total respondent stated that they have very few understanding about nutrition knowledge label. Researcher used this level of understanding to be measurement to divide total respondent into three groups; high, intermediate and low level of understanding. People with high understanding were called 'Pro', people with medium level were called 'Starter' and people with low level were called 'Carefree.

To summarize their profiles, the Pro and Starter group were sharing similar profile in term of education level as most of them were holding master's degree, exercise habit as they mostly exercise less than three times per week and normally read nutrition label every time they buy food. While the Carefree group was holding lower education level and read nutrition label only when they have time. In term of diet conscious, Pro and Starter were considered themselves as high diet conscious than the Carefree group.

5.1.2 FOPs usage

For nutrition label reading habit, it can observed that Pro and Starter group were reading nutrition label a lot more than the carefree group as they normally read every time they buy food.

From total respondent, area that people most concerned was calories, following by sugar and fat, while saturated fat and sodium were sharing the similar rank at the bottom. When breaking down into subgroup the Pro was the one, who read almost every element on FOPs, and the percentage of people who read each element was decreasing by the understanding level that people have. The Starter group concerned the most on calories, followed by sugar but less than those in Pro group. The Carefree group, also concerned

the most on calories and sugar, but again the percentage was lower than two groups before.

5.1.3 Attitude toward FOPs

Overall respondents agreed that FOPs is easier to understand than NFP the most and least agreed on the idea that FOPs can make them willing to pay higher for snack FOPs.

Comparing between subgroup, the starter gave more positive attitude towards FOPs than the rest groups as they gave highest means in every aspects. And by combining the result of nutrition label reading habits by subgroup, it can be concluded that the Starter or people who has limited of nutrition label understanding are having positive attitude toward FOPs and they are the one who use FOPs in general, as the Pro group can read the full version of nutrition label and they normally concern in all elements (calories, sugar, fat, saturated fat and sodium) so they will read NFP instead of FOPs. While the carefree group think that FOPs can draw attention and easier to understand but as they are not normally read the nutrition label so they think that the FOPs is not important and have very few impact on their attitude toward brand or the price they will give to snack.

5.1.4 Attitude toward snack with FOPs

Respondents agreed the most on the idea that FOPs made them feel that snack was safe to consume as some of in-depth interview result showed that they thought snack that has FOPs must be approved from government institute before they can put FOPs on packaging so they assumed that snack that has FOPs must have been approved for safety consumption. Respondents also agreed that FOPs help increase creditability to the brand, where the reason behind this attitude might be the same as one that mentioned before.

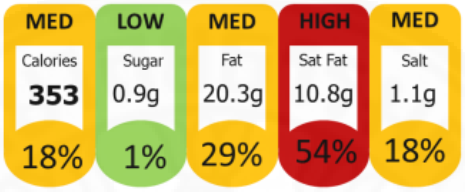
5.2 Recommendations

Based on research objectives that want to explore attitude toward FOPs, snack that has FOPs and finally to recommend the most effective FOPs and the results, the recommendations can be made as following:

5.2.1 FOPs design should have color

The most effective FOPs design that will catch attention, help increase understanding and perceived quality should compose of color that indicate level of each nutrition factor that have been mixed in snack (red, yellow, green color). And to help increase creditability to the brand, the recommended FOPs design should have color and word indicate high, med, low level of each nutrition factor on FOPs together *(See figure 5.1).*

Figure 5.1: FOPs designed with word and



However, to increase willingness to pay the findings showed that word and color should not come together for the purpose of this matter. The FOPs should have only word without color or color without word will be impactful for this factor.

5.2.2 New snack brand should have FOPs on packaging to increase creditability

In case of new snack brands that about to launch to market, companies should consider to put FOPs on their snack packages in order to increase brand's creditability. Because most people believe that the FOPs is the sign of government approval so they see that snack with FOPs is safe to consume and in case they never know the brand before they will choose snack that has FOPs. FOPs will help new brand to create creditability in consumers mind and also drive the first sale.

5.3 Limitation of the study

This research contains some limitations such as sampling method: convenience sampling, small size of samples: two hundred respondents, time period of collecting data and questionnaires were distributed via online channel only. The research findings and results cannot be represented to the entire population.

Reference

Becker, M. W., Bello, N. M., Sundar, R. P., Peltier, C., & Bix, L. (2015). Front of pack labels enhance attention to nutrition information in novel and commercial brands. *Food Policy*, 76–86.

Graham DJ and Jeffery RW. (2011). *Location, location, location: eye-tracking evidence that consumers preferentially view prominently positioned nutrition information.* Minnesota: University of Minnesota.

Hall and partners. (2013). *Proposed Front-of-Pack food labelling design: qualitative research outcomes.* Department of health and ageing.

Hall and partners. (2014). *FoPL Stage 2 Research Measuring the impact of FoPL labeling on consumer food purchase choices.* DEPARTMENT OF HEALTH AND AGEING.

Huang, R., & Zhu, C. (2013). *Consumer and Producer Responses to Front-of-Package Nutrition Labelling.* Department of Agricultural and Resource Economics and the Charles J. Zwick Center for Food and Resource Policy, University of Connecticut.

Koenigstorfer, J., Wa, G., Stys´ko-Kunkowska, M., & Groeppel-Klein, A. (2013). Behavioral effects of directive cues on front-of-package nutrition information: the combination matters! *Public Health Nutrition:17(9)*, 2115–2121.

Miller, L. M., Cassady, D. L., Gibson, T. N., Beckett, L. A., Ellwood, K., Applegate, E., & Wilson, M. D. (2015). *Misunderstanding of Front-Of-Package Nutrition Information on US Food Products.* UNITED STATES.: Sidney Arthur Simon, Duke University Medical Center.

Roberto, C. A., Brownell, K., Shivaram, M., Martinez, O., Boles, C., & Harris, J. L. (2012). The Smart Choices front-of-package nutrition label. Influence on perceptions and intake of cereal. *Appetite*, 651–657.

sacks, G., rayner, M., & swinburn, B. (2009). Impact of front-of-pack 'traffic-light' nutrition labelling on consumer food purchases in the UK. *Health Promotion International,Vol.24.No.4*.

Tarabella, A., & Voinea, L. (2013). Advantages and limitations of the Front-of-Pack (FOP) labeling systems in guiding the consumers' healthy food choice. *Amfiteatru Economic Interferences*, 198-207.

Thailand FDA. (2010). *ฉลากอาหาร*. Thailand FDA.

wansink, B., & chandon, P. (2006). Can "Low-Fat" Nutrition Labels Lead to Obesity? *JOURNAL OF MARKETING RESEARCH.Vol.63*, 605–617.

APPENDICES

APPENDIX A
IN-DEPTH INTERVIEW QUESTIONS GUIDE

Screening question

1. Have you been purchasing any snacks such as fried or baked popcorn, rice crisps or extruded snacks, crackers or biscuits, filling wafers and fried or baked potato chips during the past 1 month?
2. How old are you?

The questions guide for in-depth interview

1. What is the important factor for choosing snack?
2. Do you know FOPs? (respondents were asked without aided, then aided with show card)
3. Do you know understand all of elements that show on FOPs?
4. Which area in FOPs that you normally concern?
5. How often that you use FOPs?
6. What do you think about FOPs in Thailand?
7. What do you think about snack that has FOPs?

Demographic questions

1. Occupation
2. Exercise habit
3. Diet conscious level

APPENDIX B

Survey

Hello, I am student of Thammasat University, Master in Marketing Program. I am currently conducting a research on impact of snacks front-of-package nutrition label on young adult consumption choices and I am very much appreciate you giving your time to complete the survey. Your answer in questionnaire will be kept confidential and will be used strictly for educational purposes only.

Part A. Screening Questionnaire

A1) Have you been purchasing any snacks such as fried or baked popcorn, rice crisps or extruded snacks, crackers or biscuits, filling wafers and fried or baked potato chips during the past 1 month? (SA)

1 Yes (Continue with A2)

2 No (Terminate)

A2) How old are you? (SA)

1 Under 18 years old (Terminate)

2 18 to 25 years old (Gen X : Continue)

3 26 to 35 years old (Gen Y : Continue)

4 Over 35 years old (Terminate)

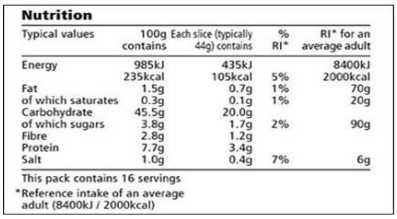
A3) Do you know what is a nutrition label? (Nutrition fact panel or Front-OF-Pack)

1 Yes (Continue with B1)

2 No (Terminate)

Main Questions

Nutrition Fact Panel (NFP):
ฉลากโภชนาการอย่างเต็ม



Front of pack nutrition label (FOPs):
ฉลากโภชนาการอย่างย่อ

Part B. Nutrition label usage

B1) How often do you buy snacks? (SA)

1. Less than 3 times per week

2. Between 3 – 5 times per week

3. More than 5 times per week

B**2) According to these statements, please rate how importance each factor is to you when buying a snack. (SA)**

Rating will rank from 1 to 5, 1= "least important" and 5 = "most important" (SA)

Factor	**Least important**				**Most important**
B2.1) Brand	1	2	3	4	5
B2.2) Packaging	1	2	3	4	5
B2.3) Price	1	2	3	4	5

B2.4) Personal Health issue	1 2 3 4 5
B2.5) Taste	1 2 3 4 5

B3) How often do you read nutrition label? (SA)

1 Every time I buy food

2 Only when I have much time.

3 Never

B4) According to the picture, which part of the Front-of-Pack nutrition label that you concern? (MA)

1 Calories

2 Sugar

3 Fat

4. Saturated fat

5. Sodium

Part C. Attitude evaluation

C1) How much do you agree with the following statements concerning Front-Of-Pack nutrition label (FOP) ?

Rating will rank from 1 to 7, 1 = "Strongly disagree" and 7 = "Strongly agree" (SA)

Factor	**Strongly disagree**	**Strongly agree**
C1.1) FOP Label draws my attention more compared to NFP	1 2 3 4 5 6 7	

C1.2) FOP Label is easier to understand than NFP	1	2	3	4	5	6	7
C1.3) FOPs plays an important role in decision making process	1	2	3	4	5	6	7
C1.4) FOPs makes the brand more credible (in case I never know this snack brand before)	1	2	3	4	5	6	7
C1.5) In case of buying snack brand that I never know before, I will intend to buy snack with FOPs even the price is higher	1	2	3	4	5	6	7

C2) How much do you agree with the following statements concerning <u>snacks with FOPs</u>?

Rating will rank from 1 to 7, 1 = "Strongly disagree" and 7 = "Strongly agree" (SA)

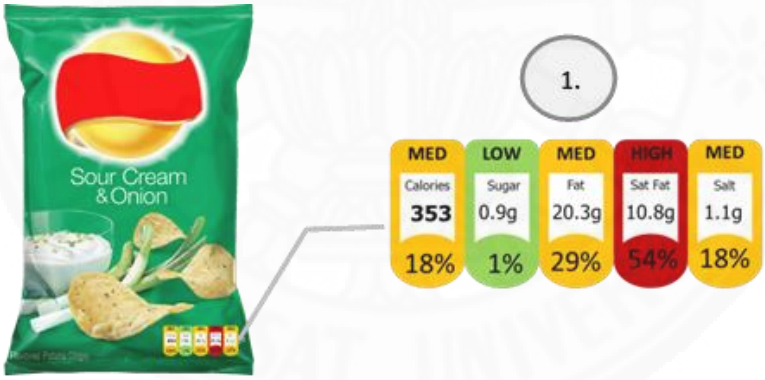
Factor	**Strongly disagree**						**Strongly agree**
C2.1) Safe to consume	1	2	3	4	5	6	7
C2.2) Good for health	1	2	3	4	5	6	7
C2.3) This type of FOPs makes me feel like the snack is made of good quality product	1	2	3	4	5	6	7
C2.4) FOPs makes the brand more credible (in case I never know this snack brand before)	1	2	3	4	5	6	7

C2.5) In case of buying snack brand that I never know before, I will intend to buy snack with This type of FOPs even the price is higher	1	2	3	4	5	6	7

Part D. FOPs evaluation

Type a.

D1) How much do you agree with the following statement when seeing snacks' packaging below. Rating will rank from 1 to 7, 1 = "Strongly disagree" and 7 = "Strongly agree" (SA)



Factor	Strongly disagree						Strongly agree
D1.1) This type of FOPs can easily catch my attention	1	2	3	4	5	6	7
D1.2) This type of FOPs makes me easily to understand nutrition content	1	2	3	4	5	6	7

D1.3) This type of FOPs makes me feel like the snack is made of good quality product	1	2	3	4	5	6	7
D1.4) FOPs makes the brand more credible (in case I never know this snack brand before)	1	2	3	4	5	6	7
D1.5) In case of buying snack brand that I never know before, I will intend to buy snack with This type of FOPs even the price is higher	1	2	3	4	5	6	7

Type b

D2) How much do you agree with the following statement when seeing snacks' packaging below. Rating will rank from 1 to 7, 1 = "Strongly disagree" and 7 = "Strongly agree" (SA)

Factor	**Strongly disagree**						**Strongly agree**
D2.1) This type of FOPs can easily catch my attention	1	2	3	4	5	6	7
D2.2) This type of FOPs makes me easily to	1	2	3	4	5	6	7

understand nutrition content							
D2.3) This type of FOPs makes me feel like the snack is made of good quality product	1	2	3	4	5	6	7
D2.4) FOPs makes the brand more credible (in case I never know this snack brand before)	1	2	3	4	5	6	7
D2.5) In case of buying snack brand that I never know before, I will intend to buy snack with This type of FOPs even the price is higher	1	2	3	4	5	6	7

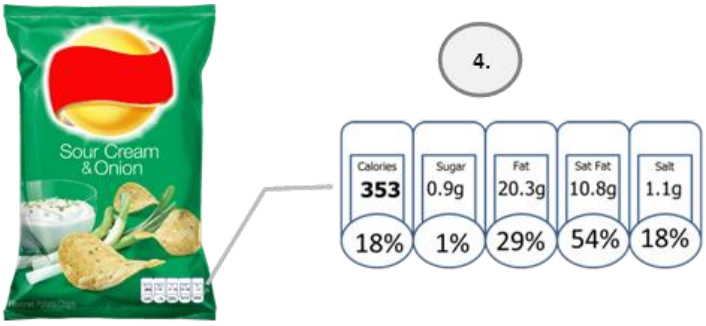
Type c.

D3) How much do you agree with the following statement when seeing snacks' packaging below. Rating will rank from 1 to 7, 1 = "Strongly disagree" and 7 = "Strongly agree" (SA)

Factor	Strongly disagree						Strongly agree
D3.1) This type of FOPs can easily catch my attention	1	2	3	4	5	6	7
D3.2) This type of FOPs makes me easily to understand nutrition content	1	2	3	4	5	6	7
D3.3) This type of FOPs makes me feel like the snack is made of good quality product	1	2	3	4	5	6	7
D3.4) FOPs makes the brand more credible (in case I never know this snack brand before)	1	2	3	4	5	6	7
D3.5) In case of buying snack brand that I never know before, I will intend to buy snack with This type of FOPs even the price is higher	1	2	3	4	5	6	7

Type d.

D4) How much do you agree with the following statement when seeing snacks' packaging below. Rating will rank from 1 to 7, 1 = "Strongly disagree" and 7 = "Strongly agree" (SA)



Factor	**Strongly disagree**						**Strongly agree**
D4.1) This type of FOPs can easily catch my attention	1	2	3	4	5	6	7
D4.2) This type of FOPs makes me easily to understand nutrition content	1	2	3	4	5	6	7
D4.3) This type of FOPs makes me feel like the snack is made of good quality product	1	2	3	4	5	6	7
D4.4) FOPs makes the brand more credible (in case I never know this snack brand before)	1	2	3	4	5	6	7
D4.5) In case of buying snack brand that I never know before, I will intend to buy snack with This type of FOPs even the price is higher	1	2	3	4	5	6	7

Part E. Demographic

E1) Gender (SA)

1 Male

2 Female

E2) Occupation (SA)

1 Entrepreneur

2 Employees

3 Government officers

4 Freelance

5 Others (Please specify)_____

E3) Highest education level (SA)

1 lower than Bachelor's degree

2 Bachelor's degree

3 Master's degree

4 Higher than Master's degree

E4) Diet conscious, in general (SA)

Not Interest				**Interest**
1	2	3	4	5

E5) Times exercise per week (SA)

1 everyday

2 4-5 times per week

3 0-3 times per week

E6) Nutrition knowledge level (SA)

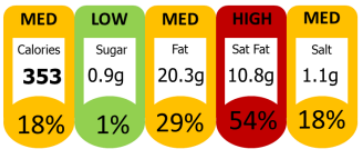
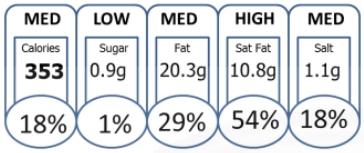
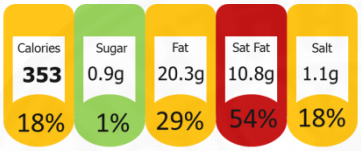
1 I can understand all labels on NFP

2 I don't understand FOP, I can understand all labels on FOPs

3 I don't understand FOP, but I can understand some labels on FOPs

APPENDIX C

Recommended FOPs

Type a.		• Wording (low, med, high) • Color
Type b.		• Wording (low, med, high) • No color
Type c.		• No wording (low, med, high) • Color
Type d.		• No wording (low, med, high) • No color

APPENDIX D

The differences of diet conscious level between people who has high, intermediate and low nutrition label understanding level

ANOVA					
Diet conscious between groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	30.131	2	15.065	16.006	.000
Within Groups	185.424	197	.941		
Total	215.555	199			

Post hoc- Multiple Comparisons						
(I) Understanding FOP	(J) Understanding FOPs	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High	Intermediate	-.100	.179	.843	-.52	.32
	Low	.772*	.156	.000	.40	1.14
Intermediate	High	.100	.179	.843	-.32	.52
	Low	.872*	.185	.000	.44	1.31
Low	High	-.772*	.156	.000	-1.14	-.40
	Intermediate	-.872*	.185	.000	-1.31	-.44

APPENDIX E

Association between diet conscious and level of nutrition label understanding

Correlation				
		High understanding	Intermediate understanding	Low understanding
Diet conscious	Pearson Correlation	.206	.183	-.372
	Sig.	.003	.010	.000
	N	200	200	200

APPENDIX F

The differences of important factor for buying snack between Pro, Starter and Carefree group

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Quality	Between Groups	3.690	2	1.845	3.197	.043
	Within Groups	113.705	197	.577		
	Total	117.395	199			
Taste	Between Groups	3.223	2	1.611	3.955	.021
	Within Groups	80.277	197	.407		
	Total	83.500	199			

Post hoc- Multiple Comparisons							
	(I) Understanding level	(J) Understanding level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Low Bound	Upper Bound
Quality	Pro	Starter	.232	.140	.227	-.10	.56
		Carefree	-.134	.122	.518	-.42	.16
	Starter	Pro	-.232	.140	.227	-.56	.10
		Carefree	-.366*	.145	.033	-.71	-.02
	Carefree	Pro	.134	.122	.518	-.16	.42
		Starter	.366*	.145	.033	.02	.71
Taste	Pro	Starter	.328*	.118	.016	.05	.61
		Carefree	.074	.103	.753	-.17	.32
	Starter	Pro	-.328*	.118	.016	-.61	-.05
		Carefree	-.254	.122	.095	-.54	.03
	Carefree	Pro	-.074	.103	.753	-.32	.17
		Starter	.254	.122	.095	-.03	.54

APPENDIX G-a

Compare means of attitude toward FOPs among nutrition label understanding level.

Attitude toward FOPs						
Understanding level		FOPs draws my attention more compared to NFP	FOPs is easier to understand than NFP	FOPs plays an important role in decision making process	FOPs makes the brand more credible (in case I never know this snack brand before)	In case of buying snack brand that I never know before, I will intend to buy snack with FOPs even the price is higher
Pro	Mean	3.64	3.95	4.35	4.20	3.70
	N	84	84	84	84	84
	Std. Deviation	1.774	1.830	1.646	1.950	1.768
Starter	Mean	**4.89**	**4.96**	**5.04**	**4.58**	**4.33**
	N	45	45	45	45	45
	Std. Deviation	1.599	1.445	.976	1.177	1.665
Carefree	Mean	**4.55**	4.73	4.13	4.06	3.38
	N	71	71	71	71	71
	Std. Deviation	1.371	1.341	1.230	1.351	1.302
Total	Mean	4.25	4.46	4.43	4.23	3.73
	N	200	200	200	200	200
	Std. Deviation	1.679	1.637	1.412	1.604	1.625

APPENDIX G -b

ANOVA table: Compare means of each attitude toward FOPs among nutrition label understanding level.

Multiple Comparisons							
Tukey HSD Dependent Variable	(I) Understanding level	(J) Understanding level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Low Bound	Upper Bound
FOP Label draws my attention more compared to NFP (Attractiveness)	**Pro**	**Starter**	-1.246*	.296	**.000**	-1.94	-.55
		Carefree	-.906*	.258	**.002**	-1.52	-.30
	Starter	**Pro**	1.246*	.296	**.000**	.55	1.94
		Carefree	.340	.305	.507	-.38	1.06
	Carefree	**Pro**	.906*	.258	**.002**	.30	1.52
		Starter	-.340	.305	.507	-1.06	.38
FOP Label is easier to understand than NFP (Easy to understand)	**Pro**	**Starter**	-1.003*	.293	**.002**	-1.70	-.31
		Carefree	-.780*	.256	**.007**	-1.38	-.18
	Starter	**Pro**	1.003*	.293	**.002**	.31	1.70
		Carefree	.223	.302	.741	-.49	.94
	Carefree	**Pro**	.780*	.256	**.007**	.18	1.38
		Starter	-.223	.302	.741	-.94	.49
FOP nutrition label plays an important role in decision making process (Important for decision making)	**Pro**	**Starter**	-.699*	.254	**.018**	-1.30	-.10
		Carefree	.218	.222	.587	-.31	.74
	Starter	**Pro**	.699*	.254	**.018**	.10	1.30
		Carefree	.918*	.262	**.002**	.30	1.54
	Carefree	Pro	-.218	.222	.587	-.74	.31
		Starter	-.918*	.262	**.002**	-1.54	-.30
FOP nutrition label makes the brand more credible (Creditability)	Pro	Starter	-.375	.296	.414	-1.07	.32
		Carefree	.146	.258	.838	-.46	.76
	Starter	Pro	.375	.296	.414	-.32	1.07
		Carefree	.521	.305	.204	-.20	1.24
	Carefree	Pro	-.146	.258	.838	-.76	.46
		Starter	-.521	.305	.204	-1.24	.20
In case of buying snack brand that I never know before, I will intend to buy snack with FOP nutrition label even the price is higher (Willingness to pay)	Pro	Starter	-.631	.294	.084	-1.33	.06
		Carefree	.322	.257	.423	-.28	.93
	Starter	Pro	.631	.294	.084	-.06	1.33
		Carefree	.953*	.304	**.006**	.24	1.67
	Carefree	Pro	-.322	.257	.423	-.93	.28
		Starter	-.953*	.304	**.006**	-1.67	-.24
*. The mean difference is significant at the 0.05 level.							

APPENDIX H- a

Compare means of each attitude toward snack with FOPs among nutrition label understanding level.

Attitude toward snack that has FOPs						
Understanding level		Safe to consume	Good for health	FOPs makes me feel like the snack is made of good quality product	FOPs makes the brand more credible (in case I never know this snack brand before)	In case of buying snack brand that I never know before, I will intend to buy snack with This type of FOPs even the price is higher
Pro	Mean	4.92	4.75	4.26	4.68	4.10
	N	84	84	84	84	84
	Std. Deviation	1.450	1.334	1.490	1.482	1.565
Starter	Mean	4.78	4.49	4.87	5.07	4.84
	N	45	45	45	45	45
	Std. Deviation	1.396	1.687	1.486	1.763	1.623
Carefree	Mean	4.90	4.63	4.56	4.68	4.06
	N	71	71	71	71	71
	Std. Deviation	1.161	1.365	1.216	1.039	1.107
Total	Mean	4.88	4.65	4.50	4.77	4.25
	N	200	200	200	200	200
	Std. Deviation	1.336	1.427	1.411	1.418	1.462

APPENDIX H- b

ANOVA table: Compare means of each attitude toward snack with FOPs among nutrition label understanding level.

Multiple Comparisons							
Tukey HSD Dependent Variable	(I) Understanding level	(J) Understanding level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Low Bound	Upper Bound
In case of buying snack brand that I never know before, I will intend to buy snack with This type of FOP nutrition label even the price is higher	Pro	Starter	-.749*	.265	.014	-1.37	-.12
		Carefree	.039	.231	.985	-.51	.58
	Starter	Pro	.749*	.265	.014	.12	1.37
		Carefree	.788*	.273	.012	.14	1.43
	Carefree	Pro	-.039	.231	.985	-.58	.51
		Starter	-.788*	.273	.012	-1.43	-.14
*. The mean difference is significant at the 0.05 level.							

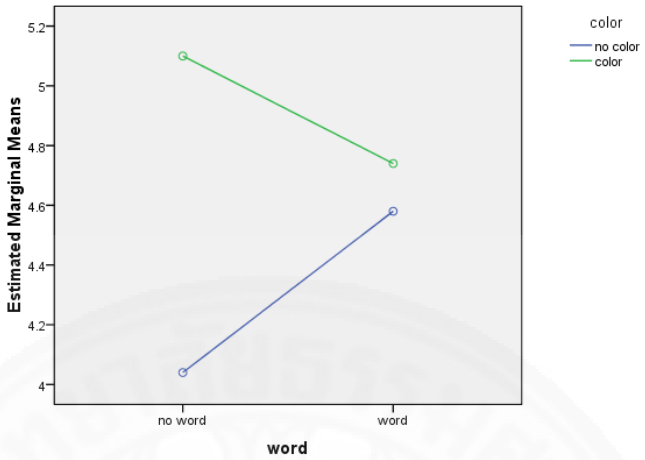
APPENDIX I -a

Tests of Between-word and color Effects on Attractiveness.

Tests of Between-Subjects Effects					
Dependent Variable : Attractiveness					
	Type III Sum of Squares	df	Mean Square	F	Sig.
word	.405	1	.405	.233	.630
color	18.605	1	18.605	10.718	.001
word * color	10.125	1	10.125	5.833	.017

APPENDIX I –b

Marginal means of word and color on Attractiveness factor



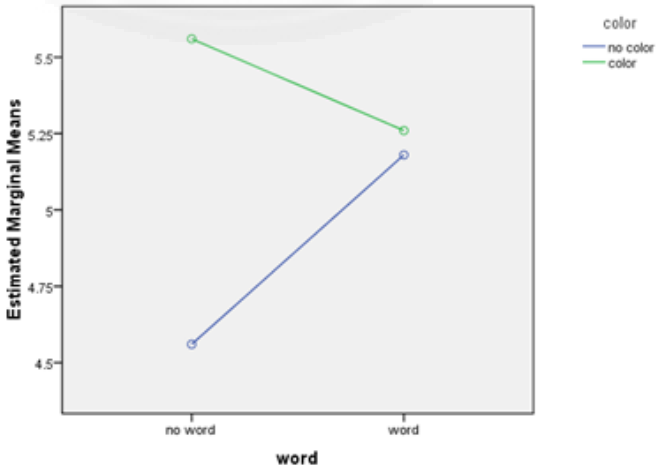
APPENDIX J - a

Tests of Between-word and color Effects on Understanding.

Tests of Between-Subjects Effects					
Dependent Variable : Understanding					
	Type III Sum of Squares	df	Mean Square	F	Sig.
word	1.280	1	1.280	.747	.388
color	14.580	1	14.580	8.514	.004
word * color	10.580	1	10.580	6.178	.014

APPENDIX J - b

Marginal means of word and color on Understanding factor



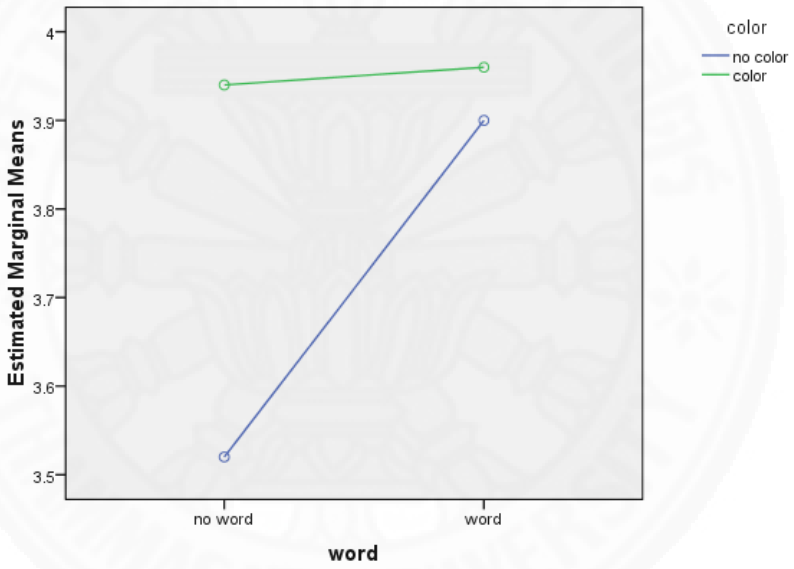
APPENDIX K - a

Tests of Between-word and color Effects on Perceived quality.

Tests of Between-Subjects Effects					
Dependent Variable : Perceived quality					
	Type III Sum of Squares	df	Mean Square	F	Sig.
word	2.000	1	2.000	1.078	.300
color	2.880	1	2.880	1.552	.214
word * color	1.620	1	1.620	.873	.351

APPENDIX K - b

Marginal means of word and color on Perceived quality factor



APPENDIX L - a

Tests of Between-word and color Effects on Creditability.

Tests of Between-Subjects Effects					
Dependent Variable : Creditability					
	Type III Sum of Squares	df	Mean Square	F	Sig.
word	18.605	1	18.605	10.970	.001
color	1.445	1	1.445	.852	.357
word * color	.405	1	.405	.239	.626

APPENDIX L - b

Marginal means of word and color on Creditability factor

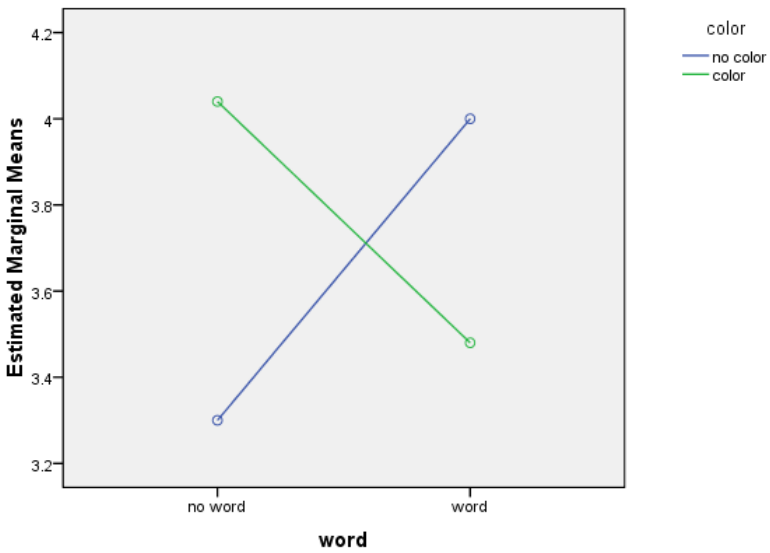
APPENDIX M - a

Tests of Between-word and color Effects on Willingness to pay

Tests of Between-Subjects Effects					
Dependent Variable : Willingness to pay					
	Type III Sum of Squares	df	Mean Square	F	Sig.
word	.245	1	.245	.113	.737
color	.605	1	.605	.279	.598
word * color	19.845	1	19.845	9.154	.003

APPENDIX M- b

Marginal means of word and color on Willingness to pay factor



BIOGRAPHY

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