

# VISUAL COMMUNICATION ON FOOD PRODUCTS PACKAGING FOR JAPANESE ELDERLY PERSONS

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## ABSTRACT

*An outstanding quality of graphic design for food packaging acts as a powerful communicative channel to attract consumers. Generally, a proper graphic design involves the use of photos and calligraphy. This research focused on the functional application of graphic design in Thai food packaging developed for elderly Japanese consumers. Data were collected through surveys involving 351 Japanese elderly residing in Thailand and 300 Japanese food packaging samples.*

*By applying the practical use of graphic design on food packaging, the elderly Japanese consumers were able to have a better understanding on ideas conveyed by food manufacturers. The graphic designs consist of photos showing the food inside the packaging, Japanese motifs, calligraphy, and floral motifs, indicating the meticulous lifestyle of the Japanese. Japanese consumers over the age of 70 usually pay attention to the functional attributes of products rather than their aesthetic attributes. Therefore, the use of symbols, explicit photos, readable texts, easy to understand product explanations, and saturated colors plays a significant role in the functional application of graphic designs. In addition, the products should be clearly seen from a distance, are portable, and made from natural material.*

**Keywords:** : Visual communication, packaging design, elderly person

## 1. INTRODUCTION

Japan is considered as a huge market with high-potential customers of around 127 million people. The size of the Gross Domestic Product (GDP) is ranked ninth in the world with a value of ¥479.2 million (US\$4.57 million). Its economic size is regarded as the world third largest after the United States and China. In Japan, various types of products are available for consumers including goods for the senior citizens who make up 32% (more than 30 million people) of the total populations (International Monetary Fund 2013).

Japan National Institute of Population and Social Security Research (2012) reported an increase in the number of Japanese senior citizens beginning 2002. The report showed that people over the age of 65 made up 19% of the total population. The number rose to 20% in 2006 and 30% in 2014. It is estimated that the number of senior populations will be over 30% by 2033. In other words, one-third of the Japanese citizens will be made up of senior citizens aged 65 and above. Senior citizens are associated with certain criteria such as slower physical movement and mental ability that affect brain function and decision making. They can easily become irritable and suffer from eyesight and health problems which may lead to changes in their lifestyle and their amount of food intake. Although many aging hindrances are unavoidable, they can be solved by functional application of graphic designs that can improve their lifestyle (Hongrapas, 2008).

A healthy living condition prolongs the average lifespan of Japanese people. This provides opportunities for them to access the promising market and to empower the senior citizens (Office of Lifestyle Trade Promotion, 2018). Since most senior citizens still continue to work, they are involved in economic activities which contributes to the Japanese economic system. Research show that those aged 50 and above possess high purchasing power as a result of a decrease of financial commitments towards their children, and in average, their savings would reach ¥6 million (over \$50,000). In addition, those who retire between the age of 60 and 75 would have accumulated pension worth up to ¥14 million (\$120,000), which allows them to maintain their wealthy lifestyle and to have more free time.

There are two elements influencing Japanese consumers' buying decisions: product design and quality. Generally, Japanese consumers will first look at the design of the packaging, followed by the quality of the products that suits their lifestyles. Therefore, it is essential for marketing specialists to add elements of simplicity and ease of use of products. The examples are as listed below.

- The products have to be designed based on essential needs: product portability and label legibility; for example, mobile phones or certain home appliances.
- The products should capture the attention of the younger consumers such as music, recreation and tourism.
- There is a high demand for healthy lifestyle products. Thus, product designs should focus both on customers who need medical treatment and those of the older population. Some products could also be fashionable although research have shown that the elderly Japanese are more likely to buy products with a simple design than the fashionable ones.
- Food products for elderly consumers should be easily digested and made of low-calorie ingredients such as chicken and fish.

The Japanese value a healthy lifestyle and are meticulous about everything. This makes them unique in many ways such as in their thinking style, perseverance, accountability, punctuality, and their acceptance of technological development which are intertwined with cultural preservation. Regardless of where they are in the world, they will examine products in the market carefully and select the ones with Japanese designs they are familiar with. Consumer behaviors among the Japanese are reflected in the grocery and food they buy. Therefore, to attract the customers, Thai food products would have to adjust their flavors and package products with interesting designs.

## 1.1 The Objectives

1. To study visual communication elements on food packaging among elderly Japanese.
2. To study consumer behaviors, reasons, attitudes, motivations, and tastes in elderly Japanese deriving from visual perception and the functional approach which could impact the purchasing decision based on graphic designs of food packaging.

George and Michael (2008) described the concept of 'Brand Identity Creation' which portrays the creation of a unique identity of products that can impress consumers' sensory perception. The brand identity creation processes include the following:

1. Attributes of the products such as branding, calligraphy, logo design, color tones, packaging; distributors and public relation.
2. Benefits derived from the products such as flavors, odor, textures, ingredients, practicality; also included are the manufacturing process, the origin of the products and manufacturers.
3. Values of the products experienced by the consumers, such as confidence from owning the products, product reliability, and values.
4. The personality of the products such as their fashionable look.

## 1.2 Variables of the Research

1. Independent variables include basic details of Japanese consumers such as gender and age.
2. Dependent variables include consumer behaviors, reasons, attitudes, motivations, and tastes (Kotler & Armstrong 2006).

## 2. MATERIALS AND METHODS

This research was both quantitative and qualitative involving the following steps:

1. The patterns of visual communication on 300 pieces of Japanese food packaging were studied;
2. A survey on the satisfaction from 351 Japanese elderly consumers towards the packaging prototypes was carried out. The samples were randomized through the non-probability sampling method. The samples, subject to the survey, were selected through purposive sampling.

- The packaging designs were evaluated by seven specialists of graphic designs.

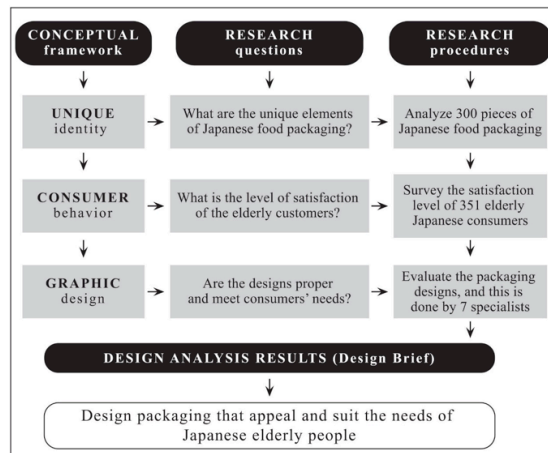


Figure 1: The research framework

## 2.1 Research Tools

- Questionnaires to collect data on preference, attitude, purchasing reason, motivation, and taste from the consumers.
- Checklists to collect data on Japanese food packaging features: picture, calligraphic, color, symbols/ graphics, and motifs.
- Evaluation forms to collect information from the graphics and packaging specialists.

## 2.2 Statistical Evaluation

- Descriptive statistics were used to analyze data from the consumers and evaluation forms from the specialists.
- Inference statistics was used to test the hypothesis and to analyze the relationship between independent and dependent variables.

The scale responses in the questionnaires were created according to the Likert Scale. Respondents identified their level of agreements which were classified into five levels: “5” strongly agree, “4” agree, “3” moderately agree, “2” slightly agree, and “1” least agree. The acceptable responses calculated from the questionnaires should be well over “3.41” of the average value set as a criterion. The validity of the content relationship was tested against the index of item objective congruence (IOC) (Stufflebeam, 1997). The context was evaluated by CIPP Model, and the validity was evaluated by three research specialists.

After the questionnaires were adjusted according to recommendations given by the specialists, a pre-test involving 30 samples with similar qualification criteria as the research samples was conducted to test the reliability of the questionnaires. The reliability was analyzed through Cronbach’s Alpha Coefficient Method as it is a suitable method for creating questionnaires with a rating scale. Data derived from the questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows Version 17. Descriptive statistics were utilized to obtain frequency result. Percentage calculation was used to measure the level of consumers’ agreement. Mean score and standard deviation were used to determine the consumer preference and motivation. Inferential statistics was used to test the hypothesis and analyze the relationship between independent and dependent variables. The methods involved the following:

- T-Test was calculated to determine the differences between the average values of the two variables: males and females.
- A variance was tested using F-test to compare the average values of more than two variables: age, educational level, and occupation. One-way ANOVA was used to analyze the differences among the variable groups. If differences among the variable groups were found, a comparative analysis between a pair of variables would take place. The pair of variables would then be continuously paired using a multiple comparison test with Fisher’s Least Significant Difference (LSD) at 0.05.
- The Pearson Product Moment Correlation Coefficient was used to analyze the correlation between the independent and dependent variables using the criteria shown in Table 1.

Table 1: The correlation between independent and dependent variables

Correlation Coefficient @	Level of relationship
<b>Below 0.20</b>	Low correlation
<b>0.20 – 0.39</b>	Relatively low correlation
<b>0.40 – 0.59</b>	Medium correlation
<b>0.60 – 0.79</b>	Relatively high correlation
<b>Over 0.80</b>	High correlation
<b>Over 1.00</b>	Perfect correlation

### 3. RESULTS AND DISCUSSION

This research analyzed the findings of a survey carried out on graphic designs of 300 Japanese food packaging which focused on the functional applications of visual communication elements: pictures, calligraphic, symbolic/ graphics, colors, and motifs. The results of the analysis are listed as follows.

1. According to the functional applications of the pictures, it is found that the most optimum function is a bright photo followed by a bright Japanese printing art and a bright Japanese comic art. However, as seen in Table 2, bright pictographs and illustrations are rarely applied on the food packaging. The results indicated that most Japanese food packaging involved designs with bright and colorful photos.

Table 2: The Frequency of the functional application of picture

Types of Pictures	The frequency of use from a total of 300 food packaging
Colorful Photo	210
Colorful Japanese Printing Art	122
Colorful Japanese Comic art	117
Colorful Pictograph	96
Colorful Illustration	55
Monochrome Printing Art	0
Black and White Photo	0
Monochrome Japanese Comic art	0
Black and White Illustration	0
Monochrome Pictograph	0

2. According to the functional application of calligraphy, the most optimum function is the Japanese Kanji written language followed by Hiragana, Katakana, and Romanji. However, Thai language is not found on the Japanese food packaging at all as can be seen in Table 3. The result indicated that most Japanese food packaging were designed with Japanese traditional calligraphy.

Table 3: The Frequency of the functional application of calligraphy

Alphabet types	The frequency of use from a total of 300 food packaging
Kanji	250
Hiragana	205
Katakana	150
Romaji	75
Thai alphabets	0

3. According to the functional application of symbols or graphics, the most optimum function is the symbol of food preparation instructions, followed by the symbol of food texture identification. However, symbols indicating the product type was hardly found on the packaging as can be seen in Table 4. This indicated that the designs of most Japanese food packaging were mostly based on functional approaches using symbols or graphics.

Table 4: The Frequency of the functional application of symbolic or graphic

Symbols or Graphics	The frequency of use from a total of 300 food packaging
Food Preparation Instructions	280
Food Texture	150
Food Category	60
Food Quality	0
Storing of Food Instructions	0
Warnings	0
INS for Food Additives	0

4. According to the functional application of colors, it is found that the most optimum function is the realistic and bright tones of colors, followed by duotones, monotone, soft-tone, and vivid tone as shown in Table 5. The result indicated that the designs of Japanese food packaging mostly involved realistic shades and bright tone colors.

Table 5: The Frequency of the functional application of color

Types of color tones	The frequency of use from a total of 300 food packaging
Realistic Shade	280
Bright Tone	270
Duotones / Two Tones	220
Monotone	85
Soft Tone	70
Vivid Tone	65
Pale Tone	0
Subdued Tones	0
Dark Tones	0

5. According to the functional design of motifs, designs that are most effective and are highly used are designs with motifs that reflect Japanese identity, calligraphic motifs, and plant and floral motifs. Secondary designs are designs with organic, geometric, scenery, seasonal, and free-form motifs. Abstract and heritage motifs are found occasionally. The least frequently used motifs are art period and regional motifs. Finally, tribal and Thai motifs are also found on the food packaging as shown in Table 6. The result indicated that the designs of most Japanese food packaging involved traditional motifs, floral motifs, organic motifs, and calligraphy.

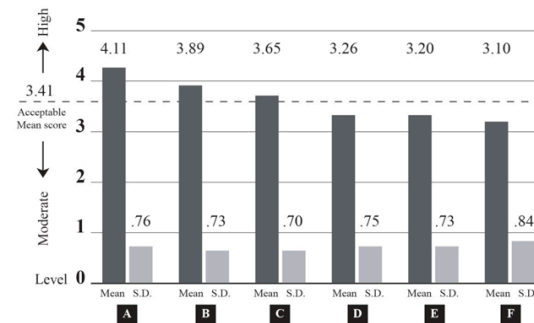
Table 6: The Frequency of the functional application of motif

Types of Motifs	The frequency of use from a total of 300 food packaging
Japanese Identity Motif	285
Calligraphic Motif	270
Floral Motif	265
Organic Motif	250
Geometric Motif	210
Scenery Motif	150
Seasonal Motif	140
Freeform Motif	125
Abstract Motif	80
Heritage Motif	75
Art period Motif	50
Regional Motif	25
Tribal Motif	0
Thai Identity Motif	0

Based on the results, it can be concluded that Japanese graphic designers have utilized their designs mainly to ease communication between food manufacturers and consumers through the use of photos, Kanji alphabets, and symbols that instruct food preparations, and realistic and bright color tones with Japanese motifs, calligraphy, and organic and floral motifs.

After the results were concluded, packaging protocols were designed, and a survey involving 351 elderly Japanese residing in Thailand were carried out. Contents analyzed involved the optimum use of the pictures, picture features, logo position, product explanation position, product texture identification, product texture symbol position, product type identification, product type identification position, color tones, and motifs. The optimum use of graphic designs on food packaging is listed as follows.

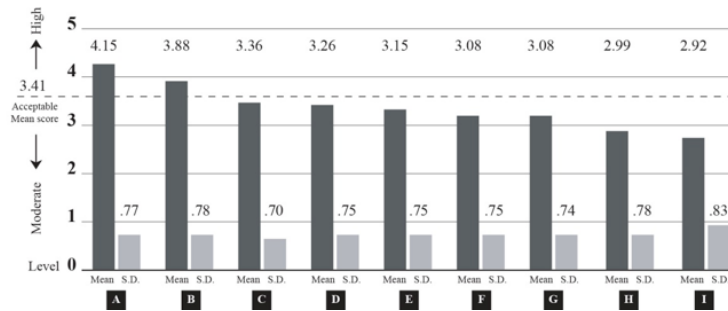
1. The highest frequency of functional use of the picture is the use of a large picture at the bottom of the packaging, followed by the use of a full-frame picture, and the use of a large picture on the upper part of the packaging as shown in Figure 2. The result indicated that most elderly Japanese were satisfied with food packaging with a large picture at the bottom of the packaging that covers 70% of the total area.



- A = A large picture at the bottom of the packaging contributing to 70% of the total area
- B = Full - frame picture (100%)
- C = A large picture on the upper part of the packaging contributing to 70% of total area
- D = A small picture in the middle of the packaging contributing to 30% of total area
- E = A small picture on the upper part of the packaging contributing to 30% of total area
- F = A small picture at the bottom of the packaging contributing to 30% of total area

Figure 2: Consumers' Satisfaction level of picture size and positioning

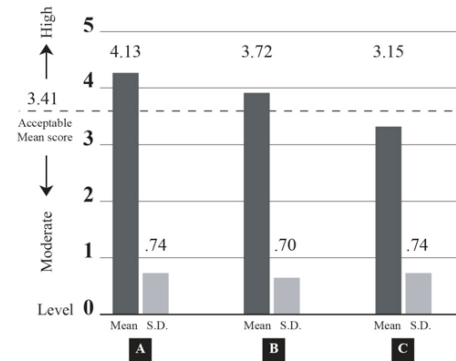
2. The highest frequency of functional use on picture features is the use of a large clear picture followed by a full-frame clear picture as shown in Figure 3. The result indicated that most older Japanese adults were satisfied with large and clear pictures on food packaging.



- A = A large clear picture
- B = Full - frame clear picture
- C = A large pale picture
- D = Full - frame pale picture
- E = A small pale picture
- F = A large subdued - tone picture
- G = Full - frame subdued - tone picture
- H = A small clear picture
- I = A small subdued - tone picture

Figure 3: Consumers' satisfaction level of picture features

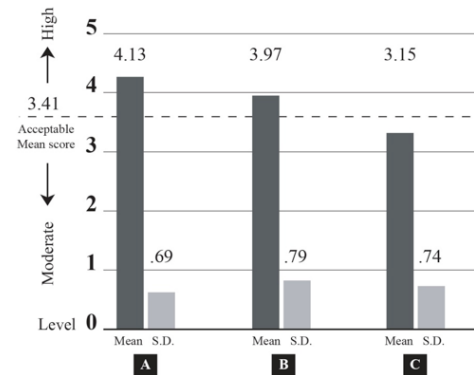
3. The highest frequency of functional use on a logo position is the position found on the upper part of the packaging, followed by the position in the middle of the packaging as shown in Figure 4. The result indicated that most of the Japanese older adults in the study were satisfied with logos being positioned on the upper part of the packaging.



- A = An upper part of the packaging
- B = Middle of the packaging
- C = Bottom of the packaging

Figure 4: Consumers' satisfaction level of the positioning of logos on the packaging

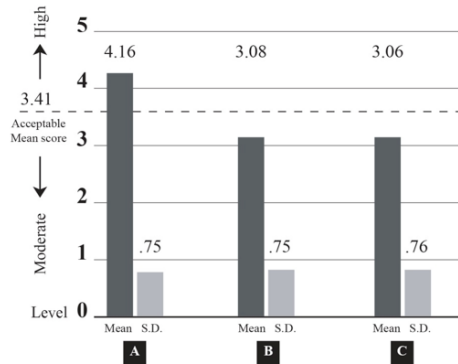
4. The highest frequency of the functional use of the position of the product explanation was found to be on the upper part of the packaging followed by in the middle of packaging as shown in Figure 5. The result indicated that most of the Japanese older adults were satisfied in product explanation of food packaging placed on the upper part of the packaging.



- A = An upper part of the packaging
- B = Middle of the packaging
- C = Bottom of the packaging

Figure 5: Consumer's satisfied levels of the positions of the product explanations on the packaging

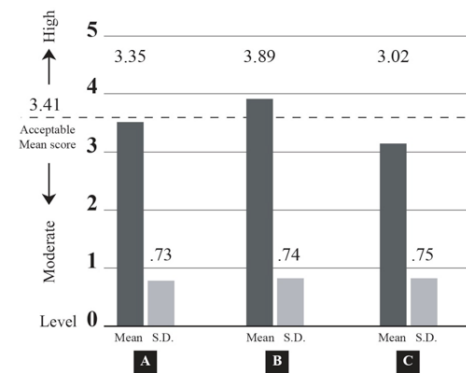
5. The highest frequency of functional use on product texture identification position is the position on the upper part of the packaging as shown in Figure 6. The result indicated that most of the Japanese older adults were satisfied in product texture identification on food packaging placed on the upper part of the packaging.



- A = An upper part of the packaging
- B = Middle of the packaging
- C = Bottom of the packaging

Figure 6: Consumer's satisfied levels of the position of product texture identification

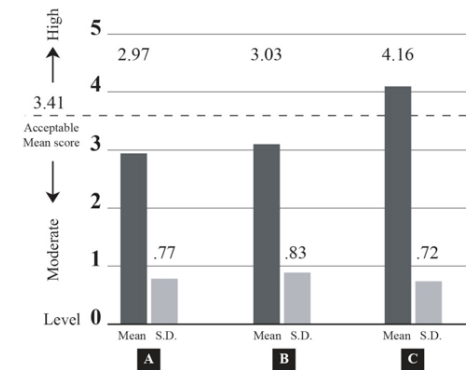
6. The highest frequency of functional use on the position of symbols to instruct food preparation is in the middle of the package as seen in Figure 7. The result indicated that most of the Japanese older adults were satisfied with symbols to instruct food preparation on food packaging placed in the middle of the packaging.



- A = An upper part of the packaging
- B = Middle of the packaging
- C = Bottom of the packaging

Figure 7: Consumer's satisfied levels of the position of food preparation instruction

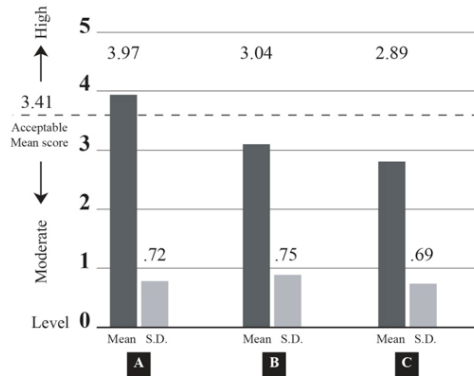
7. The highest frequency of functional use on the position of ingredient symbols is the position found at the bottom of the package as can be seen in figure 8. The result indicated that most of the Japanese older adults were satisfied with ingredient symbols on food packaging positioned at the bottom of the packaging.



- A = Upper part of the packaging
- B = Middle of the packaging
- C = Bottom of the packaging

Figure 8: Consumers' satisfaction level on the positions of food ingredient identification

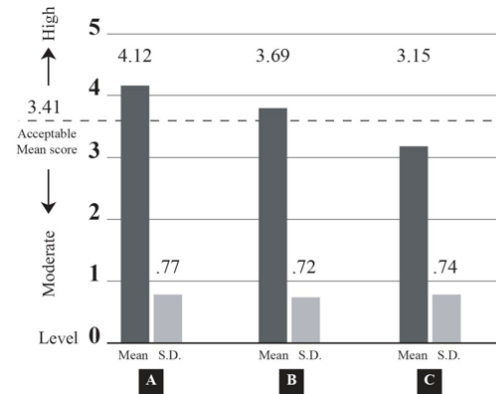
8. The highest frequency of functional use on a color scheme is the bright tone while the pale and subdued tones are unfavorable as can be seen in Figure 9. The result indicated that most of the Japanese older adults were satisfied with the bright color tones covering the food packaging.



- A = Bright Tone
- B = Pale Tone
- C = Subdued Tone

Figure 9: Consumers' satisfaction level on the color scheme on the packaging

9. The highest frequency of functional use of motif is the Japanese motifs followed by international motifs. Thai motifs, however, are unfavorable as seen in Figure 10. The result indicated that most of the Japanese older adults were satisfied with Japanese style motifs covering the food packaging.

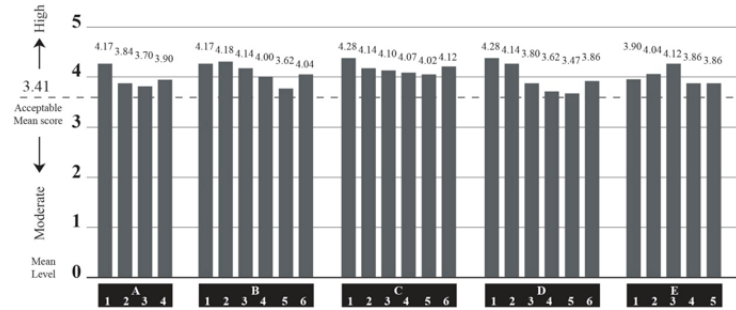


- A = Japanese Style
- B = International Style
- C = Thai Style

Figure 10: Consumers' satisfaction level on the styles of motifs on the packaging

After an evaluation of the functional use of graphic designs on the food packaging was completed, seven marketing specialists and graphic designers assessed the appropriateness of the ideas on the graphic design, marketing strategies, and consumer behavior. The assessment was presented in the form of a five-level rating scale as shown in Figure 11. The results indicate that most of the Japanese older adults are satisfied with the food packaging design elements i.e. Brand name and logo, Pictures, Motifs, Calligraphy, and Symbols. Most of the Japanese older adults are satisfied with the picture size that covers 30% of the area of the packaging.





A: Elements of design

A 1 = Brand name and logo

A 2 = Symbols showing the ingredients on the packaging

A 3 = Symbols showing the food preparation instructions

A 4 = Overall design elements

B: Graphic design with picture covering 70% of the total area of the packaging

B 1 = Pictures

B 2 = Motifs

B 3 = Calligraphy

B 4 = Color Tones

B 5 = Symbols

B 6 = Overall graphic design with the picture

C: Graphic design with picture covering 30% of the total area of the packaging

C 1 = Pictures

C 2 = Motifs

C 3 = Calligraphy

C 4 = Color Tones

C 5 = Symbols

C 6 = Overall graphic design with the picture

D: Graphic design with picture covering 100% of the total area of the packaging

D 1 = Pictures

D 2 = Motifs

D 3 = Calligraphy

D 4 = Color Tones

D 5 = Symbols

D 6 = Overall graphic design with the picture

E: Overall design elements

E 1 = Overall design elements

E 2 = Overall graphic design with the picture covering 70% of the packaging

E 3 = Overall graphic design with the picture covering 30% of the packaging

E 4 = Overall graphic design with the picture covering 100% of the packaging

E 5 = Overall results

Figure 11: Evaluation of functional uses

After all the results were gathered, a briefing on the design was delivered based on the marketing strategies, consumer behaviors and graphic elements. Graphic design for Thai convenience food was generated into three patterns: Graphic design with a full-frame picture as in Figure 12; Graphic design with a picture covering 70% of the total area of the packaging as shown in Figure 13; and Graphic design with a picture covering 30% of the total area of the packaging as shown in Figure 14.



Figure 13: Graphic design with the picture covering 70% of the total area



Figure 14: Graphic design with the picture contributing 30% of the total area

#### 4. CONCLUSION

This research has emphasized the functional use from graphic design appearing on the food packaging for the elderly market. Typograph, and pictograph/symbol designs can be described as examples of visual communication approach. The main objective of the graphic design is to create a just simple picture with universal design and boundless language, this is correlated to Tracada (2008). The details of the picture need to be removed in order to better understanding. As well as this, the secondary objective is to create the aesthetic perception which will eventually become a taste or a trend of the time.

The independent variable is the elderly group of people who are physical deteriorated causing vision problems. Therefore, the graphic design for the elderly customers on the food packaging has to be fully functional enhanced rather than the other age groups. The visual communication on food packaging needs to focus substantially more on functional application than an aesthetic approach. Nonetheless, the basic needs are still necessary for those elderly consumers, too. This can be found on Boonke (2002) who stated that the basic needs of senior citizens included mental needs together with social and economic requirements.

The well-crafted design on the food package needs to convey the message to convince target consumers to buy the products. Moreover, this finest design is an element to increase the product value relating to Wajitragum (2014) who affirmed that the principle of visual communicative design is to create the product recognition by applying numerous design elements: photos, illustrations, typograph, text, color schemes, color hues/tones, scales/proportions, motifs, and space/ground. These can be discussed as follows.

1. In order to gain the optimum use of graphic design on food packaging in Japan, the bright tone photo and illustration were highly-frequently applied as they were suitable methods to grab consumers' attention. Bright tone comic art, Japanese printing art, and pictograph were secondarily applied to the food package. Nevertheless, the artistic work can be found on the Japanese package, in general, owing to Japanese nationalism, and strong cultural background. Therefore, it is relatively easy to perceive and to feel the real Japanese uniqueness and identity through the packaging design.

One more Japanese identity which can be commonly found is the skillful calligraphy. This Japanese calligraphy can be classified as a partial area of fine art because the letter pattern looks similar to the graceful drawing. There is no need to take time to comprehend through alphabet reading. Thus, the Kanji, Hiragana, and Katakana alphabet types are widely used on the Japanese packaging while Romanji can be easily found on the products with international look and can be used to describe the product details.

The functional application of Japanese pictograph is unique among the packaging from the other countries as the Japanese is pretty meticulous. Their well-designed pictograph helps the consumers from wasting time-consumption on reading the package details which are long and printed in small font size. This can cause problems for elderly consumers. Most pictographs portray the ingredients, flavors, and instructions of food preparation. As the hurried lifestyle of Japanese, they are unlikely to waste their precious time on unnecessary details. The understandable pictograph or drawing has to be utilized to describe the process, and food texture which can be a great help for the elderly to make the suitable purchasing decision upon the ready-cooked food products available in the market.

The Japanese idea of minimalism can be influential in shaping the use of color tones to express the Japanese identity. Most acceptable color tones for Japanese are bright but not vivid tones. It is usually found that most gentle and bright tones are used harmoniously with tastefulness on the packaging. This is correlated to Oka (1975) who presented the functional use of Japanese color tones to express the product personality and uniqueness. Hence, to successfully market the products in Japan, the design needs to be adapted in according to the

consumer's taste leading to permanent product recognition and repurchasing.

Japanese motifs and ornaments on the food packaging can also be found but not noticeable. Most motifs include organic, floral, geometric forms. Scenery or seasonal motif can be found on souvenir goods or gift boxes. This can be evidence for their highly careful consideration.

2. It is unavoidable to take the geriatric conditions into an account of the graphic design on packaging as the elderly citizens are mental and physical impaired. These conditions can cause the abruptly social change in lifestyle, so the graphic design should be functioned as a solution for the troublesome issues which can alleviate the seriousness of the vision problems. This can be supported by Chong and Shureen (2016) who optimized their graphic design function to reduce the intensity of the problems and to create the mental peacefulness.

The Japanese citizens aged lower than 60 have counted themselves as middle-aged workers who can pursue their work and demand products with aesthetic elements. Unlike the people aged over 70, they have considered and admitted themselves as senior citizens who need more time to conduct any activities in their daily lives. Moreover, due to their weakened sensory systems, this group of people prefers the product with functional quality to products with aesthetic elements. This is correlated to Chandhasa (2017) who primarily focused on the functional use from the products rather than the product attractiveness. Sometimes, it is important to initiate the practically-oriented structure of the product before applying the graphic design approach.

In order to gain the high yield result from sustainable design, the designers and the manufacturers should utilize the reduction of the unnecessary process, materials and laboring together with taking an energy saving campaign into their consideration. An elderly friendly design and universal design for handicapped people are important as well because they need visual communication aid through pictures or symbols. For example, the use of symbols presenting food texture can help the elderly to figure out the toughness of the meat that

matches their ability of food consumption. The structure of the product should be portable and consumer friendly. Some containers with lids should be easy to reopen. It is advisable to use the environmentally friendly containers derived from the local material such as coconut husk paper which was researched by Bussaban and Chumee (2019).

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