

## Conference Paper

# The Exploration of the Cultural Contents of Pastry Totems and the Study on Consumer Preference

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## Abstract

Aiming at the preference for pastry totems in Taiwan, KJ method, item analysis, and reliability analysis are used for drawing the pastry totem preference questionnaire. Considering that Taichung City has a reputation as a pastry town, 316 pastry consumers in Taichung City were accidentally sampled as the research object for the research survey. The results show that 'service requirement' is the prior consideration of purchase behavior. Furthermore, consumers prefer pastry shapes of 'flower and grass' and 'geometry'. It is suggested that pastry businesses could remain the cultural elements in traditional totems to move pastry shapes toward elaborate design and pass down the pastry totem culture in Taiwan.

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**Keywords:** pastry totem, totem culture, totem preference

## 1. Introduction

### 1.1. Research motivation and objective

Passing down traditional Chinese culture, pastry is mainly applied to the occasions of festival sacrifice and weddings & funerals. Meanwhile, pastry presents the functions of gifts, food, and offerings. Ancestors pressed auspicious totems on the surface of pastry with wooden molds where the living expectation was transferred into representational totems through the pastry-making process. From the viewpoint of semiotics, culture is the system expressing willingness through symbols, which are applied and created in the public and social exchange [1]. The cultural meanings of totems are the social collective imagination. Traditionally, Chinese people pursue fortune, prosperity, longevity, happiness, and wealth and sustain the psychological vision in totems.

The development dilemma of pastry culture originated after 1960, when Taiwan transformed from agricultural society into industrial and commercial society. It forced pastry industry, under social changes, to simplify traditional rituals and culture and

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enter the mechanized production that wooden molds were replaced by plastic ones and the application of pastry totems was simplified and disappeared [2, 3]. It is considered in this study that pastry totems still present the value and cultural meaning, while the performance of pastry totems should take consumer needs into account. Accordingly, the following major objectives are contained in this study.

1. To discuss the application and the cultural content of pastry in Taiwan through literature analysis.
2. To explore consumer preference for pastry totems in Taiwan for the valuable reference of pastry businesses.

## 1.2. Research area and limit

With objective factors, the research area and limits are listed as below.

1. This study mainly discusses consumers' visual preference for pastry totems, but not focusing on other factors in purchase behavior, e.g. brand benefits.
2. Pastry totems in Taiwan are studied, and the picture sources are literatures on pastry totems and official websites of pastry shops and bakeries in Taiwan.
3. Pastry consumers in Taichung City are selected as the research object.

## 2. Literature Review

### 2.1. Pastry culture

Pastry was brought in Taiwan from Fujian and Guangdong areas in late Ming and early Qing Dynasty. Rice used to be the staple of the ethnic groups in Fujian and Guangdong. When they came to Taiwan, rice snacks, offerings, and gift culture were brought into Taiwan to develop pastry with local characteristics. Following traditional Chinese customs, pastry in Taiwan was called "Chinese-style pastry" and "Chinese pastry" [4]. "Cake" and "pastry" were originally different food. The ingredients of pastry contained rice and flour [5]. "Cake" was mixed with ground rice or beans, white sugar, and seasonings and then steamed to be pieces of food, e.g. mung bean cake and rice cake. "Pastry", on the other hand, was made flat-round food with rice flour or flour with other stuffing and baked, e.g. moon cake and pie. Nowadays, "pastry" generally covers the food made of cake and pastry ingredients. Chien [2] pointed out

the relationship between pastry in Taiwan and Chinese rituals & culture. The application of pastry was divided into “festivals” and “life rituals”. Festivals referred to pastry used for festival sacrifice, which could be applied from the first month to the twelfth month of lunar calendar in Taiwan, including Chinese New Year, the Jade Emperor’s birthday, Lantern Festival, Tomb Sweeping Day, Ghost Festival, Mid-Autumn Festival, Double Ninth Festival, Lower Yuan Festival, Send-off Day, and gods’ birthdays. Life rituals were to celebrate important time in life, such as birth ceremony, growth ceremony, wedding, birthday, and funeral.

## 2.2. Cultural content of pastry totem

Totem is the conceptual word of modern sociology, ethnology, and cultural anthropology. The idea of totem worship, extended from totems, could be the worship of ancestors; original people regarded certain natural and non-natural objects as relatives, as the symbol of personification. Huang [6] indicated that Chinese auspicious totem contents were generally related to the belief in Confucianism, Buddhism, and Taoism, in which Taoism appeared the most profound influence on the totem content. Auspicious totems were given rich folk stories and myths & legends, and the unique cultural model was constructed through the interpretation and application of pastry totems in daily life.

Regarding the production of pastry totems, “rice cake mold” is the utensil to make rice cake board and pastry. Rice cake molds could be made of wood, pottery, porcelain, red brick, and metal, where wood with the advantages of convenient to acquire, delicate carving, and lighter weight is the major materials to make rice cake molds [7]. The common pastry molds contain cake mold, pastry mold, rice cake mold, and sugarloaf, which are designed for various ingredients, where a cake mold and a pastry mold are replaceable [2]. A sugarloaf is assembled with 2-4 pieces, carved with auspicious totems of deer, crane, dragon, phoenix, rooster, and peach. After 1971, sugarloaf became rare in Taiwan, as a delicate sugarloaf required rich sugar-cooking experience and carvers who were capable of carving sugarloaf mold were few. The technique to produce sugarloaf was gradually lost, and merely cake, pastry, and rice cake molds are known nowadays. Emblazonry carved on a rice cake mold is called “pastry totem”, which could be applied to festivals and life rituals [2] (Chien, 1999), Table 1. Festivals refer to pastry used for festival sacrifice, mainly sacrifice for gods, ghosts, and ancestors, which are related to people’s respect to nature. Life rituals refer to important time for ceremony of commemorate in life, from infant birth ceremony,

growth ceremony, to wedding and funeral. Passing down for a century, pastry culture is gradually deepened to become a characteristic in Taiwan. Pastry could satisfy people's appetite and spirit.

TABLE 1: Application of pastry totem.

| Application         | Explanation  |
|---------------------|--|
| <b>Festivals</b>    | Pastry for festival sacrifice, including Chinese New Year, the Jade Emperor's birthday, Lantern Festival, Tomb Sweeping Day, Ghost Festival, Mid-Autumn Festival, Double Ninth Festival Lower Yuan Festival, Send-off Day, and gods' birthdays.        |
| <b>Life rituals</b> | Pastry for ceremony of commemorate in life, containing birth ceremony (three morning, one month, and four month), growth ceremony (16 year-old), wedding (betrothal gifts, pray to the jade emperor, visit, visit bride's parents), birthday, funeral. |

Reference: Chien (1999). Art of pastry and rice cake mold

### 2.3. Cognitive psychology of totem

In visual communication, "image" is the medium and "cognition" is the key in successful information transmission; both visual communication and user cognition are equally important [8]. Norman [9] advocated "User-Centered Design" oriented to interact with users through product image information. The product information not being received by users' mental model would result in wrong product usability [10]. Moreover, the communication system of pastry totems could be used for explaining the process of a totem generating meanings. "Signifier" and "signified" are two major elements of symbols. "Signifier" refers to the pattern of symbols, which could be perceived by human senses. "Signified" refers to the thought meaning behind symbols and the psychological meaning hid behind an object. Saussure considered that the link between symbol representation and meaning was the random abstraction. Apparently, symbols are the system formed by social convention; it is necessary to understand the meaning of symbol system given by the society in order to understand the meanings of certain symbols. The idea of auspicious totems is to perform abstract auspicious meanings with representational forms with human imagination so as to make some symbols present symbolism. For instance, "gourd" in Chinese auspicious totem presents the meanings of large fortune and many children, and "bat" represents fortune. It is discovered that little research focuses on pastry totems; most researchers, with the idea of artifact conservation, propose that the development dilemma of totems lies in time

change causing the elimination of molds so that the diversity of totems become simplification and the public appear ambiguity on the cognition of totems. Accordingly, this study, from the aspect of consumption, intends to explore consumer cognition and preference for the cultural content of pastry totems and further draw the development strategy for pastry totems.

### 3. Methods

The survey of pastry totem preference in this study is divided into "consumption attitude" and "preference factor". (1) Consumption attitude signifies consumer evaluation of the consumer behavior of pastry totems. (2) Preference factor signifies consumers' subjective preference when facing various shapes of pastry totems. KJ method, item analysis, and reliability analysis are the process to draw the pastry totem preference questionnaire for consumption attitude, while literatures and focus group are applied to select and establish the preference factors in pastry totems. What is more, the pastry totem preference questionnaire is used for pastry consumers. With accidental sampling, pastry consumers in Taichung City are sampled in this study.

#### 3.1. Consumption attitude scale for pastry totem preference

Three experts in pastry industry and image research field are invited as the focus group to assist in drafting "consumption attitude scale" and the successive items of "preference factor". Besides, "KJ method" is applied to organize interview data and transfer the interview contents into main, sub-dimensions and items, Table 2.

A pretest is preceded before the distribution of formal questionnaire to delete items with bad reliability and without discrimination. Total 50 pastry consumers in Taichung City are invited for the questionnaire survey, and Likert scale is used for expressing personal identity with the item statement. The collected data are proceeded item analysis and reliability analysis to eliminate items with bad quality.

Test of extreme groups in item analysis is applied to select items in this study. Comparison of extreme groups aims to find out the high-score group and the low-score group of each item. The top 27% is the high-score group, and the bottom 27% is the low-score group. Items higher than the dimension mean (top 27%) are set "1", while those lower than the dimension mean (bottom 27%) are set "2". Regarding the high-score group and the low-score group as independent variables and items as dependent variables, T-test is utilized for testing the statistical significance of the items

TABLE 2: Dimension and item of consumption attitude scale.

| major dimension | A. need for use value |                                  | B. need for aesthetics |                                      | C. need for time                         |                                    | D. service requirement                                |  |
|-----------------|-----------------------|----------------------------------|------------------------|--------------------------------------|--|------------------------------------|---|--|
| sub-dimension   | culture               | edibility                        | beauty of style        | symbolism                            | industrial technology                    | diversification                    | intimacy  | professionalism                                      |
| item 1          | with cultural meaning | tasty as the priority            | shape with meaning     | with high symbolism                  | mainly machine processing                | early totems with diverse patterns | traditional pastry package not being delicate         | wooden molds being questioned the health             |
| item 2          | with locality         | request for tasty and auspicious | color with meaning     | lack of contemporary design elements | mass customization                       | current totem patterns being dull  | currently offering gift boxes for different festivals | offering customers with pastry production experience |
| item 3          | religious worship     |                                  | realism                |                                      | combined with 3D laser engraving machine |                                    | stressing on relationship interaction                 | paying attention to taste and symbolic consumption   |
| item 4          | weddings & funerals   |                                  |                        |                                      |  |                                    |   |  |

between the high-score and the low-score groups. An item with statistical significance ( $P < 0.05$ ) reveals the discrimination, while an item without statistical significance presents that the participants give too high or too low scores to the item, i.e. the item not showing discrimination that it is deleted. Moreover, reliability analysis is used for testing the internal consistency of questionnaire items. The research results reveal the Cronbach  $\alpha$  of "need for use value", "need for aesthetics", "need for time", and "service requirement" being 0.642, 0.601, 0.653, and 0.662, respectively, and the Cronbach  $\alpha$  coefficient is  $> 0.6$  that it present good reliability. After item analysis and reliability analysis of the pretest questionnaire, the formal questionnaire is determined as Table 3.

### 3.2. Drawing the questionnaire for pastry totem preference factor

The samples of pastry totems are acquired from the official websites of pastry shops in Taiwan, which promote pastry and food molds with festival activities. 50 pieces of pastry totems for pastry related to festivals and life rituals with different elements and shapes are collected (Figure 1).

With literature review, preference factor in pastry totems are sought, the text and picture elements for pastry packaging design proposed by Liu [11] are referred, and focus groups are invited to evaluate the validity of pastry totem preference factors. After discussing with focus groups, pastry totems with distinct characteristics are

TABLE 3: Formal questionnaire of pastry totem preference–consumption attitude scale.

| dimension           | No. | item   |
|---------------------|-----|--|
| need for use value  | 1   | Pastry totems present rich cultural meanings   |
|                     | 2   | I would purchase pastry with totems for festival sacrifice and gods' birthdays                   |
|                     | 3   | I would purchase pastry with totems for wedding and birthday occasions                           |
|                     | 4   | Food with regional restriction is appealing  |
|                     | 5   | Pastry totems are extremely important  |
| need for aesthetics | 6   | I would focus on the colors of pastry totems   |
|                     | 7   | I would stress on the shapes of pastry totems  |
|                     | 8   | I like pastry totems with rich decoration  |
|                     | 9   | I like the auspicious meanings of pastry totems  |
|                     | 10  | Contemporary design elements should be added to pastry totems                                    |
| need for time       | 11  | I like customized pastry totems  |
|                     | 12  | I am willing to pay for customized pastry  |
|                     | 13  | I would try to use 3D food printer for personalized pastry totems                                |
|                     | 14  | It is important to deliver customized products to customers with the fastest speed               |
|                     | 15  | The diversity of pasty totems is important   |
|                     | 16  | It is important to promote new products with the trend   |
| service requirement | 17  | I would choose a pastry shop with good service   |
|                     | 18  | Delicate package for pastry is important   |
|                     | 19  | It is important that the package could protect the integrity of pastry totems                    |
|                     | 20  | It is important to provide different gift boxes and products of festivals for customers' choices |
|                     | 21  | I would like to see the production process of pastry totems                                      |
|                     | 22  | It is important to pre-consider customers' purchase needs  |



Figure 1: Pastry totem sample collection.

selected, and factors irrelevant to pastry totems are eliminated. The pastry totem preference factors contain flower and grass totems, traditional auspicious totems, geometry, and cartoon (Table 4).

The pastry totem preference questionnaire in this study contains three parts.
















- A. Personal basic data: gender, age, educational attainment, occupation, yearly purchase times, purchase amount, and monthly disposable income; total 7 questions.

B. Consumption attitude: composed of “need for use value”, “need for aesthetics”, “need for time”, and “service requirement”, total 22 questions.

C. Preference factor: including “flower and grass totem”, “traditional auspicious totem”, “geometry”, and “cartoon”, total 15 questions.

With Likert scale, consumers are invited to evaluate “consumption attitude” and “preference factor” of pastry totems, and the scale options contain “extremely like (agree)” 5 points, “like (agree)” 4 points, “ordinary” 3 points, “dislike (disagree)” 2 points, and “extremely dislike (disagree)” 1 point.

TABLE 4: Preference factor in pastry totem.

| Style<br>occasion | flower and grasstotem   | traditional auspicious<br>totem  | geometry  | cartoon   |
|-------------------|---|--|---|---|
| festivals         | Figure 5<br><br>President Starbucks<br>Moon cake      | Figure 08<br><br>Kuo Yuan Ye<br>Champion cake                              | Figure 03<br><br>Kuo Yuan Ye<br>Mung bean cake                      | Figure 10<br><br>Rabbit mooncake                |
|                   | Figure 7<br><br>Chen Yun Pao Chuan<br>Pomelo cake    | Figure 11<br><br>National Hsinchu Living<br>Arts Center<br>Phoenix turtle | Figure 13<br><br>Cheng Yu Chen<br>Phoenix eye cake                 | Figure 12<br><br>San He<br>Mini phoenix turtle |
|                   |   | Figure 09<br><br>Commonwealth<br>Penghu Fujung turtle                     | Figure 15<br><br>Yi Mei<br>Mung bean cake                          |   |
|                   | Figure 14<br><br>Yuan Fung Cake Mold<br>Lotus pastry | Figure 2<br><br>Laoshishuo<br>Customized Chinese-style<br>pastry          | Figure 4<br><br>Yuan Ming<br>Heart-shape traditioanl<br>sun pastry | Figure 01<br><br>Yuan Ming<br>O-hsiung pastry  |
|                   |   | Figure 06<br><br>Li Ting Xiang<br>Dragon-phoenix pastry                   |   |   |
|                   |   |  |   |   |



### 3.3. Questionnaire survey

With accidental sampling, the questionnaire is distributed in the area with dense pastry businesses in Taichung City, e.g. famous pastry shops of Miyahara, Leechi, Kuo Yuan Ye, and Chen Yun Pao Chuan, around Taichung Station, for the questionnaire survey.

### 3.4. Data processing tool

Questionnaire with incomplete answers is eliminated artificially. The Statistical analysis contains descriptive statistics and inferential statistics.

1. Descriptive statistics: The percentage of times is used for presenting the basic data of pastry consumers, including gender, age, and purchase times as well as the preference percentage of festival pastry (10 pieces) and life ritual pastry (5 pieces).
2. Inferential statistics: T-test and Analysis of Variance are applied to investigate the statistical significance of gender, age, educational attainment, and purchase times of consumers to "consumption attitude" towards and "preference factor" in pastry totems. Multiple Comparison Tests is further utilized for finding out pastry totems with the best and the worst preference.

## 4. Results

### 4.1. Descriptive statistics of pastry consumers

The questionnaire survey was preceded in May, 28 – July, 11, 2017. With accidental sampling, total 330 copies of questionnaire were distributed. Removing 14 invalid copies, total 316 valid copies were retrieved, with the retrieval rate 95.15%, where female consumers appeared 62.7%, consumers aged 20~40 were 59.18%, yearly purchase times 1~3 appeared 51%, and each purchase amount within NT\$500 was 50.95%.

### 4.2. Pastry totem acceptance ranking in consumption attitude scale

The research result presents "service requirement" as the highest consumer acceptance and "need for time" the lowest, revealing that consumers pay more attention to

the service of shops than the use value, aesthetics, and need for time of pastry (Table 5).

TABLE 5: Acceptance difference in consumption attitude scale.

| dimension           | number of item | number | minimum | maximum | mean  | standard deviation | ranking |
|---------------------|----------------|--------|---------|---------|-------|--------------------|---------|
| need for use value  | 5              | 316    | 2.20    | 5.00    | 3.918 | 0.523              | 2       |
| need for aesthetics | 5              | 316    | 1.80    | 5.00    | 3.834 | 0.536              | 3       |
| need for time       | 6              | 316    | 2.00    | 5.00    | 3.815 | 0.564              | 4       |
| service requirement | 6              | 316    | 2.17    | 5.00    | 4.141 | 0.497              | 1       |

Regarding the difference of item acceptance in consumption attitude scale, the statistical result show top three acceptance as “17.I would choose a pastry shop with good service”, “22.It is important to pre-consider customers’ purchase needs”, and “19.It is important that the package could protect the integrity of pastry totems” (Table 6) in service requirement, as well as the bottom three acceptance as “13.I would try to use 3D food printer for personalized pastry totems”, “12.I am willing to pay for customized pastry”, and “6.I would focus on the colors of pastry totems”. The result reveals that consumers stress more on the service of shops than pastry totems, 3D printing in industrial technology is not commonly accepted by consumers, and most consumers do not show high intention to purchase customized pastry.

#### 4.3. Inferential statistics of pastry totem preference—consumption attitude scale

1. T-test results show that consumers with different genders present statistical significance on “11.I like customized pastry totems”  $p=0.016$  ( $p<0.05$ ), “17.I would choose a pastry shop with good service”  $p=0.036$  ( $p<0.05$ ), and “19.It is important that the package could protect the integrity of pastry totems”  $p=0.025$  ( $p<0.05$ ). Female consumers, in comparison with males, prefer customization and pay attention to the service of shops and the function of package to protect totems to ensure pastry totems not being damaged and deformed.
2. In regard to the difference of consumers with different ages in consumption attitude, consumers with different ages appear statistical significance on “15.The

TABLE 6: Acceptance difference of item in consumption attitude scale.

| dimension           | No. of item | item   | mean | standard deviation | ranking |
|---------------------|-------------|--|------|--------------------|---------|
| service requirement | 17          | I would choose a pastry shop with good service   | 4.60 | 0.573              | 1       |
| service requirement | 22          | It is important to pre-consider customers' purchase needs  | 4.32 | 0.692              | 2       |
| service requirement | 19          | It is important that the package could protect the integrity of pastry totems                    | 4.29 | 0.712              | 3       |
| service requirement | 20          | It is important to provide different gift boxes and products of festivals for customers' choices | 4.13 | 0.696              | 4       |
| need for aesthetics | 9           | I like the auspicious meanings of pastry totems  | 4.11 | 0.722              | 5       |
| need for use value  | 1           | Pastry totems present rich cultural meanings   | 4.10 | 0.730              | 6       |
| need for time       | 14          | It is important to deliver customized products to customers with the fastest speed               | 4.01 | 0.816              | 7       |
| need for time       | 16          | It is important to promote new products with the trend   | 4.00 | 0.791              | 8       |
| need for use value  | 4           | Food with regional restriction is appealing  | 3.97 | 0.852              | 9       |
| need for time       | 11          | I like customized pastry totems  | 3.93 | 0.795              | 10      |
| need for aesthetics | 10          | Contemporary design elements should be added to pastry totems                                    | 3.90 | 0.839              | 11      |
| need for time       | 15          | The diversity of pastry totems is important  | 3.90 | 0.776              | 12      |
| need for use value  | 3           | I would purchase pastry with totems for wedding and birthday occasions                           | 3.89 | 0.805              | 13      |
| need for use value  | 2           | I would purchase pastry with totems for festival sacrifice and gods' birthdays                   | 3.85 | 0.763              | 14      |
| need for aesthetics | 7           | I would stress on the shapes of pastry totems  | 3.85 | 0.743              | 15      |
| service requirement | 21          | I would like to see the production process of pastry totems                                      | 3.81 | 0.843              | 16      |
| need for use value  | 5           | Pastry totems are extremely important  | 3.77 | 0.831              | 17      |
| need for aesthetics | 8           | I like pastry totems with rich decoration  | 3.70 | 0.833              | 18      |
| service requirement | 18          | Delicate package for pastry is important   | 3.68 | 0.924              | 19      |
| need for aesthetics | 6           | I would focus on the colors of pastry totems   | 3.61 | 0.822              | 20      |
| need for time       | 12          | I am willing to pay for customized pastry  | 3.58 | 0.928              | 21      |
| need for time       | 13          | I would try to use 3D food printer for personalized pastry totems                                | 3.47 | 0.896              | 22      |

Note: Consumers regard service requirement > totems

diversity of pastry totems is important"  $p=0.049$  ( $p<0.05$ ), "19.It is important that the package could protect the integrity of pastry totems"  $p=0.001$  ( $p<0.05$ ), and "20.It is important to provide different gift boxes and products of festivals for customers' choices"  $p=0.00$  ( $p<0.05$ ). Consumers aged below 20 prefer the diversification of pastry totems and the function and beauty of product package and are more interested in new products for different festivals. Consumers aged 21~30 show similar ideas as above consumers. Consumers aged 31~40 stress more on the edible value of pastry and consider that package should be simple and practical, rather than diversified. Consumers above the age of 41, on the other

hand, prefer the edibility of pastry, instead of the diversity of pastry totems, and emphasize less on the function and beauty of package. Accordingly, the consumption patterns at different ages are distinct. Consumers below 30 could easily present purchase desires by product style, shape, and festival, while those above 41 stress more on the edible value of pastry.

3. The Analysis of Variance result reveals statistical significance ( $F=3.367$ ,  $p=0.019$ ) of consumers with different educational attainment on “4.Food with regional restriction is appealing”. With Multiple Comparison Test, it is discovered that consumers with educational attainment above university (included) and under college and high schools (included) prefer food with regional restriction.
4. Consumers with different occupation show statistical significance on “19.It is important that the package could protect the integrity of pastry totems” ( $F=2.143$ ,  $p=0.048$ ), where those in agricultural, forestry, fishery, and husbandry stress more on package function than consumers in other occupation, and “20.It is important to provide different gift boxes and products of festivals for customers’ choices” ( $F=2.509$ ,  $p=0.022$ ), where those in manufacturing, service, self-employed, and students emphasize more on package function. As the coverage is broad, binary method cannot be used for explaining specific phenomena.
5. Consumers with different monthly disposable income present statistical significance on “16.It is important to promote new products with the trend” ( $F= 3.94$ ,  $p=0.002$ ). The Multiple Comparison Test shows that consumers with monthly disposable income below NT\$70,000 pay more attention to the promotion of new products than those with monthly disposable income above NT\$80,000. However, consumers with monthly disposable income above NT\$80,000 are few that the difference is not obvious.

#### 4.4. Descriptive statistics of pastry totem preference questionnaire—preference factor







15 pastry pictures are measured with Likert scale for the preference factors in pastry totems; the mean of four preference factors is calculated with descriptive statistics, Table 7. Overall speaking, preference factors in pastry totems do not appear large differences, where “flower and grass totem” shows the highest value 3.647 on pastry shapes and “traditional auspicious totem” appears the lowest value 3.499. It reveals

that the satisfaction with the overall design of pastry shapes appears between ordinary and like, with improvement space.

TABLE 7: Descriptive statistics of pastry totem preference factor.

| preference factor            | number | minimum | maximum | mean  | standard deviation | ranking |
|------------------------------|--------|---------|---------|-------|--------------------|---------|
| flower and grass totem       | 316    | 1.00    | 5.00    | 3.647 | 0.644              | 1       |
| traditional auspicious totem | 316    | 1.00    | 5.00    | 3.499 | 0.569              | 4       |
| geometry totem               | 316    | 1.75    | 5.00    | 3.525 | 0.539              | 3       |
| cartoon totem                | 316    | 1.67    | 5.00    | 3.545 | 0.593              | 2       |

#### 4.5. Inferential statistics of pastry totem preference questionnaire—preference factor

1. T-test shows that consumers with different genders present statistical significance  $p=0.018$  ( $p<0.05$ ) on Figure 10.  (cartoon), where female consumers, compared to males, prefer such pastry.
2. Analysis of Variance shows that consumers with different ages present statistical significance on Figure 2  (tradition), Figure 6  (tradition), Figure 8  (tradition), Figure 9  (tradition), and Figure 14  (flower and grass). The Multiple Comparison Test further reveals that consumers aged above 31 prefer pastry with traditional auspice shapes as Figure 6, Figure 8, Figure 9, and Figure 14, while those under the age of 30 appear the opposite, Table 8.





















To understand the preferred pastry shapes of consumers aged below 30, descriptive statistics is used for ranking top three shapes with consumers' preference. The result shows that Figure 3  (geometry) is ranked the third preference of consumers aged below 30, which is different from other top three preferences of consumers in other age groups. It is therefore judged in this study that, in addition to the shape acceptable for all consumers, young groups prefer diversified and designed pastry shapes.

TABLE 8: Variance analysis of preference factor among consumers with different ages.

| No. of item | totem   | SS     | Df | MS    | F     | P      | Duncan                             |
|-------------|---|--------|----|-------|-------|--------|------------------------------------|
| 1           |    | 2.250  | 4  | 0.563 | 0.936 | 0.443  |                                    |
| 2           |    | 6.939  | 4  | 1.735 | 2.574 | 0.038* | Year 4>year 2                      |
| 3           |    | 6.549  | 4  | 1.637 | 2.251 | 0.064  |                                    |
| 4           |    | 3.204  | 4  | 0.801 | 1.149 | 0.334  |                                    |
| 5           |    | 3.820  | 4  | 0.955 | 1.271 | 0.281  |                                    |
| 6           |    | 6.371  | 4  | 1.593 | 2.532 | 0.04*  | Year 5>year 1=year 2               |
| 7           |    | 5.099  | 4  | 1.275 | 1.842 | 0.121  |                                    |
| 8           |    | 6.507  | 4  | 1.627 | 2.402 | 0.05*  | Year 5=year 3>year 1               |
| 9           |    | 20.304 | 4  | 5.076 | 6.433 | 0.0*** | Year 5=year 4=year 3>year 2=year 1 |
| 10          |    | 3.386  | 4  | 0.846 | 1.019 | 0.398  |                                    |
| 11          |   | 5.500  | 4  | 1.375 | 2.122 | 0.078  |                                    |
| 12          |  | 0.859  | 4  | 0.215 | 0.338 | 0.852  |                                    |
| 13          |  | 1.050  | 4  | 0.263 | 0.381 | 0.822  |                                    |
| 14          |  | 21.401 | 4  | 5.350 | 7.127 | 0.0*** | Year 5=year 4=year 3>year 2=year 1 |
| 15          |  | 3.215  | 4  | 0.804 | 1.222 | 0.302  |                                    |
















$P<0.05^*$ ;  $P<0.01^{**}$ ;  $P<0.001^{***}$ . Note: Year 1=below the age of 20; year 2=aged 21~30; year 3=aged 31~40; year 4=aged 41~50; year 5=above the age of 51

3. The Analysis of Variance result reveals that consumers with distinct educational attainment present statistical significance on totems of Figure 4  (cartoon), Figure 9  (tradition), Figure 10  (cartoon), and Figure 14  (flower and grass). The Multiple Comparison Test shows that consumers under high school (included) appear higher preference on pastry totems than other consumers, Table 9.

#### 4.6. Comparison analysis of preference for different pastry totems

With Analysis of Variance, it is discovered that the preference for different festival pastry ( $F=31.42, p<0.00$ ) and life ritual pastry ( $F=29.99, p<0.00$ ) shows statistical significance. The Multiple Comparison Test is used for finding out the groups with the highest and the worst preference for pastry totems.

TABLE 9: Variance analysis of preference factor among consumers with distinct educational attainment.

| No. of item | totem   | SS     | Df | MS    | F     | P       | Duncan                              |
|-------------|---|--------|----|-------|-------|---------|-------------------------------------|
| 1           |    | 3.854  | 3  | 1.285 | 2.163 | 0.092   |                                     |
| 2           |    | 2.401  | 3  | 0.800 | 1.166 | 0.323   |                                     |
| 3           |    | 1.343  | 3  | 0.448 | 0.604 | 0.613   |                                     |
| 4           |    | 8.268  | 3  | 2.756 | 4.059 | 0.008** | School 1=school 3>school 2=school 4 |
| 5           |    | 3.782  | 3  | 1.261 | 1.682 | 0.171   |                                     |
| 6           |    | 3.777  | 3  | 1.259 | 1.982 | 0.117   |                                     |
| 7           |    | 2.533  | 3  | 0.844 | 1.209 | 0.306   |                                     |
| 8           |    | 2.394  | 3  | 0.798 | 1.159 | 0.325   |                                     |
| 9           |    | 9.938  | 3  | 3.313 | 4.041 | 0.008** | school 1=school 3>school 2=school 4 |
| 10          |    | 11.852 | 3  | 3.951 | 4.933 | 0.002** | others>school 2                     |
| 11          |   | 0.113  | 3  | 0.038 | 0.057 | 0.982   |                                     |
| 12          |  | 1.322  | 3  | 0.441 | 0.697 | 0.554   |                                     |
| 13          |  | 0.157  | 3  | 0.052 | 0.076 | 0.973   |                                     |
| 14          |  | 15.730 | 3  | 5.243 | 6.841 | 0.00*** | others>school 4                     |
| 15          |  | 1.394  | 3  | 0.465 | 0.702 | 0.551   |                                     |

$p < 0.01$ \*\* ;  $p < 0.001$ \*\*\*.

Note: school 1=lower than (including) senior/vocational high school; school 2=college; school 3=university; school 4=higher than graduate school

1. Multiple comparison analysis of preference for festival pastry totem











The worse preference for festival application totem is Figure 9, while 5 pieces of pastry totems show better preference, including Figure 3, Figure 5, Figure 7, Figure 8, and Figure 15, which appear notable differences with other totems, Table 10.

2. Multiple comparison analysis of preference for life ritual pastry totems

The worst preference for life ritual application totems is Figure 4, while Figure 6 is the best pastry totem preferred; it reveals remarkable differences with other totems, Table 11.






The Multiple Comparison Test of totem preference for festivals and life rituals is organized in Table 12.

TABLE 10: Multiple comparison of festival totem preference factor.

| No.       | Figure 3  | Figure 5  | Figure 7  | Figure 8  | Figure 9  | Figure 10  | Figure 11   | Figure 12   | Figure 13   | Figure 15   |
|-----------|---|---|---|---|---|--|---|---|---|---|
| pastry    |  |  |  |  |  |  |  |  |  |  |
| mean      | 3.66  | 3.90  | 3.68  | 3.91  | 3.03  | 3.56   | 3.5   | 3.81  | 3.57  | 3.92  |
| Figure 3  |   | 0.211   | 1.000   | 0.161   | 0.000***  | 0.989  | 0.745   | 0.846   | 0.995   | 0.108   |
| Figure 5  | 0.211   |   | 0.360   | 1.000   | 0.000***  | 0.004**  | 0.000***  | 0.996   | 0.007**   | 1.000   |
| Figure 7  | 1.000   | 0.360   |   | 0.291   | 0.000***  | 0.957  | 0.568   | 0.940   | 0.975   | 0.211   |
| Figure 8  | 0.161   | 1.000   | 0.291   |   | 0.000***  | 0.002**  | 0.000***  | 0.992   | 0.004**   | 1.000   |
| Figure 9  | 0.000***  | 0.000***  | 0.000***  | 0.000***  |   | 0.000***   | 0.000***  | 0.000***  | 0.000***  | 0.000***  |
| Figure 10 | 0.989   | 0.004**   | 0.957   | 0.002**   | 0.000***  |  | 0.999   | 0.146   | 1.000   | 0.001**   |
| Figure 11 | 0.745   | 0.000***  | 0.568   | 0.000***  | 0.000***  | 0.999  |   | 0.011*  | 0.999   | 0.000***  |
| Figure 12 | 0.846   | 0.996   | 0.940   | 0.992   | 0.000***  | 0.146  | 0.011*  |   | 0.193   | 0.980   |
| Figure 13 | 0.995   | 0.007**   | 0.975   | 0.004**   | 0.000***  | 1.000  | 0.999   | 0.193   |   | 0.002**   |
| Figure 15 | 0.108   | 1.000   | 0.211   | 1.000   | 0.000***  | 0.001**  | 0.000***  | 0.980   | 0.002**   |   |

$P < 0.05^*$ ,  $P < 0.01^{**}$ ,  $p < 0.001^{***}$

TABLE 11: Multiple comparison of life ritual pastry totems preference factor.

| No.       | Figure 1  | Figure 2  | Figure 4   | Figure 6  | Figure 14   |
|-----------|---|---|--|---|---|
| pastry    |  |  |  |  |  |
| mean      | 3.26  | 3.41  | 2.95   | 3.65  | 3.36  |
| Figure 1  |   | 0.279   | 0.000***   | 0.000***  | 0.697   |
| Figure 2  | 0.279   |   | 0.000***   | 0.012*  | 0.964   |
| Figure 4  | 0.000***  | 0.000***  |  | 0.000***  | 0.000***  |
| Figure 6  | 0.000***  | 0.012*  | 0.000***   |   | 0.001**   |
| Figure 14 | 0.697   | 0.964   | 0.000***   | 0.001**   |   |

$P < 0.05^*$ ,  $P < 0.01^{**}$ ,  $p < 0.001^{***}$









#### 4.7. Consumers' preference factors in pastry totems


According to the research on preference factors in pastry totems, the following suggestions are proposed.

1. Time factor in pastry totems should be taken into account to enhance the connection between young groups and traditional culture





TABLE 12: Multiple comparison results of festival and life ritual pastry totem preference.

| application  | pastry totem with the worst preference  | pastry totem with the best preference  |
|--------------|---|--|
| festivals    |  <p>「Figure 9. Turtle」 (traditional auspice) &gt; other totems</p>     | <p>「Figure 15. Mung bean cake」 (geometry)  = 「Figure 8. Champion cake」  (traditional auspice) = 「Figure 5. Moon cake」  (flower and grass) = 「Figure 7. Pomelo cake」  (flower and grass) = 「Figure 3. Mung bean cake」  (geometry) &gt; other totems</p> |
| life rituals |  <p>「Figure 4. Heart-shape sun pastry」 (cartoon) &gt; other totems</p> | <p>「Figure 6. Dragon-phoenix pastry」  (traditional auspice) &gt; other totems</p>   |





“Figure 09. Turtle”  is the worst preference for festival pastry. The shape is the traditional auspicious turtle and decorated with lines, and the Chinese characters of fortune, prosperity, and longevity on the turtle back. From the aspect of culture, a turtle stands for a long life and good omen. Turtle is the characteristic offerings for Lantern Festival in Penghu, where temples would promote festival activities of begging for turtles and guessing riddles. Lin [12] explained the origin of begging for turtles in *Taiwan Folk Record* that it was the most popular custom in Taiwan; begging turtles with turtle totems or offerings for long life and blessing the safe work, healthy body, and good fortune. In the survey of pastry preference factors, it is discovered that most consumers, especially those aged below 20, do not favor turtle. It might because the rough pastry shape and the lack of connection with turtle. Particularly, traditional culture in Taiwan was influenced by external culture in the end of 20<sup>th</sup> century, western holidays got into daily life to result in large impact on traditional culture. For this reason, it should take into account how to integrate turtles into daily life to extend local culture.

2. Traditional cultural elements should be reserved: consumers above the age of 31 prefer traditional auspicious totems

Both “Figure 08. Champion cake”  and “Figure 06. Dragon-phoenix pastry”  are the pastry with the highest traditional auspice preference. Traditional auspicious totems originated from legends. Figure 08 is carved a champion riding

on a horse with a houseboy holding an umbrella for him and people taking flags and playing instruments. The rich and changeable totem presents the auspice of a champion returning home with honor. In addition to Mid-Autumn Festival, it is often seen for weddings. Consumers aged above 31 prefer such a totem. Figure 06 is a must-use totem for traditional wedding pastry. Traditional auspicious totems of dragon and phoenix are carved on the pastry. Dragon and phoenix are special totems for Chinese with high distinctiveness, as consumers generally present certain preference for dragon and phoenix; consumers aged above 51 particularly prefer Dragon-phoenix pastry. Apparently, traditional auspicious totems present rich auspicious meanings and special cultural status. For this reason, future design of pastry shape should remain traditional cultural elements.

3. Consumers prefer small and diverse pastry shapes, e.g. "flower and grass" and "geometry"

From the "Multiple Comparison Test of pastry totem preference for festivals and life rituals", the most preferred pastry shapes contain Figure 05  (flower and grass), Figure 07  (flower and grass), Figure 15  (geometry), and Figure 03  (geometry), which are all flower and grass and geometry shapes. Accordingly, consumers prefer small-amount and diversified pastry, where flower and grass and geometry shapes appear higher preference.

## 5. Conclusion

1. The number of yearly pastry purchase times is 1~3 times, and the purchase amount for each purchase is within NT\$500. The businesses are suggested to reinforce the connection between products and festival activities and packing pastry for different age groups to enhance the usage.
2. Consumers stress more on good service of a shop than the product value. Female consumers focus more on good service of a shop than male ones.
3. Consumers prefer customized pastry totems, but show low intention to spend on customized pastry. Pastry businesses are suggested to make promotion for consumers understanding the advantage of customized totems and enhance the visibility of pastry customization in the market through consumers' participation and successful cases.

4. Younger groups below the age of 30 stress more on the aesthetic value of pastry, e.g. diversity of totems and package function and beauty. Pastry businesses could promote holiday-limit gift boxes for younger groups. Those in the age group above 41 emphasize more on the edible value of products and consider totems and package diversity as minor purchase purposes; and, merely traditional auspicious totems could attract the preference and emotion.
5. Small amount of pastry with flower and grass and geometry shapes and diverse characteristics would attract consumers' attention. It is suggested that pastry businesses could remain the cultural elements in traditional totems for the pastry shape design and move pastry shapes toward elaborate design to make pastry totems be more artistic and diversified to enhance the competitive advantage of products.

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