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Findability of Commodities by Consumers: Distinguishing Different Packaging Designs

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Abstract

What package design features can help consumers find commodities faster? This study assumes that the factors in distinguishing different packaging designs of commodities differ due to consumers' different personal experiences. Thus, this paper studies the findability of commodities by consumers through distinct packaging designs. It consists mainly of two stages: (a) the first stage reviews the existing literature to determine the application of different package designs; (b) the second stage is a focus group interview designed to investigate the factors influencing consumers in distinguishing different package designs. In the investigation process, (i) samples of package bottles for testing were collected through natural observation and convenience sampling; (ii) a focus group interview was conducted to determine how a consumer recognizes the differences among packages; (iii) a grounded analysis model was employed to transfer and encode the data collected from the focus group interviews to construct a conceptual frame for trade dress and the classifications of trade dress, which can interpret variations in the recognition of packaging design differences. The results of the focus group interview showed that consumers focused more on three kinds of "trade dress": property of commodity, label design, and bottle shape design when looking for differences in packaging designs. The "bottle shape design" was the most important factor that the focus group used in distinguishing different packaging designs. The distinction in the different package designs by consumers is not limited to design elements (image, language, color, shape, etc.) only; more importantly, the distinction lies in the relationship between "trade dress" and "classifications of trade dress," which can better reflect the differences in packaging designs.

Keywords

commodity packaging; differences in packaging design; findability; trade dress.

The findability of commodities influences consumer decisions (Brown, 2008). Two-thirds of consumers' buying decisions are influenced by the packages on the shelf (Lundberg, 2004; Nilsson & Öström, 2005; Rettie & Brewer, 2000). Hence, the kind of packaging that is easy to find is a thesis worth investigating. Packaging gives appeal and provides distinction from other commodities. Furthermore, it stimulates the buyers' desire for consumption. An effective package design catches consumers' attention and experience, prolongs lingering time before the shelf, and consequently causes sales opportunity to take place directly (Cheverton, 2004; Doyle, 1996; Mikunda, 2002).

Experience in various commodities is connected with brand identity, packaging design on the shelf, and attempt to link with consumers' personal experiences (Schmitt, 1999). Therefore, design elements such as character, figure, color, brand, shape, size, material, and texture employed effectively by the package designer can create a different package and communication experience (Schmitt & Simonson, 1997; Sonsino, 1990). There are different types of cognition towards the communication design of package comprehension between consumers and designers (Author, 2007). Hence, designers have different preferences in their own design communication owing to their different senses and cognitions of the commodity itself (Antioco, Moenaert, Feinberg, & Wetzels, 2008).

This survey investigates the findability of packages. A literature review on packaging design differences is first presented, and the results of the group interview aimed at exploring the factors affecting consumer recognition and distinction of packaging design differences are then discussed.

Findability and Evaluation

Findability is a popular term on today's web (Morville, 2005). The size, shape, color, and location of an object in the physical environment will all affect its findability. The significant role of a package designer is to develop an effective package design so that the product can easily be found when searched visually. Through an effective design, the location of one commodity and its difference from others can be distinguished. Some research shows that package findability is worth exploring, as it can help consumers quickly find a specific commodity on the shelf. In terms of findability, the most decisive factor is the packaging design (Young, 1987).

Package findability tests can generally be divided into three types: (a) visibility test, which is used to evaluate the readability of the logo and font type on the package (functional comparison among different elements or between functions of packages); (b) image test, which is used to evaluate the fundamental attitude of the consumer towards one product; and (c) usage test, which is used to measure the relevant reaction to package function (Schwartz, 1971). The package designer should dedicate himself in integrating the visible and distinguishable elements on the package design to create a package with higher findability that can attract the attention of consumers.

Visual Search and Object Discernment

When searching for and discerning a commodity on the shelf, the object is first located in space. Visual searching has been widely used in visual recognition studies to evaluate various features abstracted from the visual system (Wolfe, 1994). As for the visual communication mechanism, the designer avails himself/herself of the design elements to trigger one's vision and discern the object within his/her line of sight, attract the curiosity of the watcher, and finally achieve visual communication (Chen & Guan, 2007).

Psychologists have put forward various object recognition modes, including Gestalt psychology, template matching, feature analysis, and prototype recognition (Anderson, 2004). The process of discerning is a course in which an image of one object is received and searched visually, or one is attracted by some distinctive features. The individual then matches the features with the image template existing within him/her, produces the identity sign, and then finally understands the connotation behind it (Giles, 2005). Two factors must be set for discerning the packaging design: the stimulus produced by the differences in the outer packaging design and the one's past knowledge and experience in packaging design differences. These two factors interact and lead to the discernment of the packaging design. This thesis is concerned with the kind of information that can be abstracted from consumers' visual system, which can be explored through visual searching.

Package Design Differences, Trade Dress, and Trade Dress Classification

Elements such as shape, brand, logo, color, information appended, auxiliary packaging material, material structure, and volume lead to differences in packaging design (Lan, 2008). Through visual communication, the package design expresses the trait of one commodity to help consumers find it and to realize buying behavior. Thus, in this study, differences in packaging design is defined as the distinct visual differences among packages brought about by the employment of the elements of packaging design (CommCraft, n.d.).

All firms or companies convey their names, brands, containers, packaging, appearance, and other features. Through these elements, the object's trade dress, such as font, language, sound, figure, sign, number, image, color, and shape, which can express or deliver its commercial value or conceptual behavior is presented to the consumers (Garner, 1999). Trade dress can be categorized into two groups: product design and product packaging. Product packaging refers to the combination of all the design elements and their arrangement, including the logo, pattern, color, and color combination, among others. Product design, on the other hand, includes the shape, surface configuration, and other design features (Handelman, 2008). In this thesis, trade dress refers to the design features embodied in the product or in the visual appearance of its package, while classification of trade dress involves the design elements in constructing the trade dress.

The existing package design research is fragmentary and incomplete. There is a need to investigate the differences in design elements and the findability of relevant trade dress designs on

the shelf. Through a literature review, this thesis attempts to explore the concepts of package findability, trade dress, and classifications of trade dress. Subsequently, it investigates how consumers sense and recognize the differences among packaging.

Purpose of the Research and Implementation Method

The factors influencing each testee's recognition of design differences were assessed through a focus group interview. Thereafter, the conceptual model for recognizing packaging design differences was constructed. The investigation flow is as follows (Figure 1):

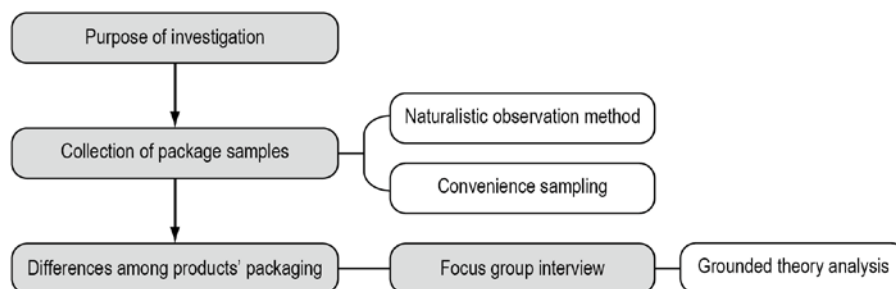


Figure 1 Factor exploration flow chart of packaging design differences recognized by consumers

The stages of the investigation are as follows: (i) samples of package bottles for testing were collected through natural observation and convenience sampling; (ii) a focus group interview was conducted to determine how a consumer recognizes the differences among packages; and (iii) a grounded analysis model was employed to transfer and encode the data collected from the focus group interviews to construct a conceptual frame for trade dress and classifications of trade dress, which can interpret variations in the recognition of packaging design differences.

Collection and Creation of Test Samples

Collection of Test Samples

Samples were taken from the hypermarket. However, not all the articles were included in this thesis because of their diverse package categories. Thus, actual samples were restrictively selected. The following steps were employed:

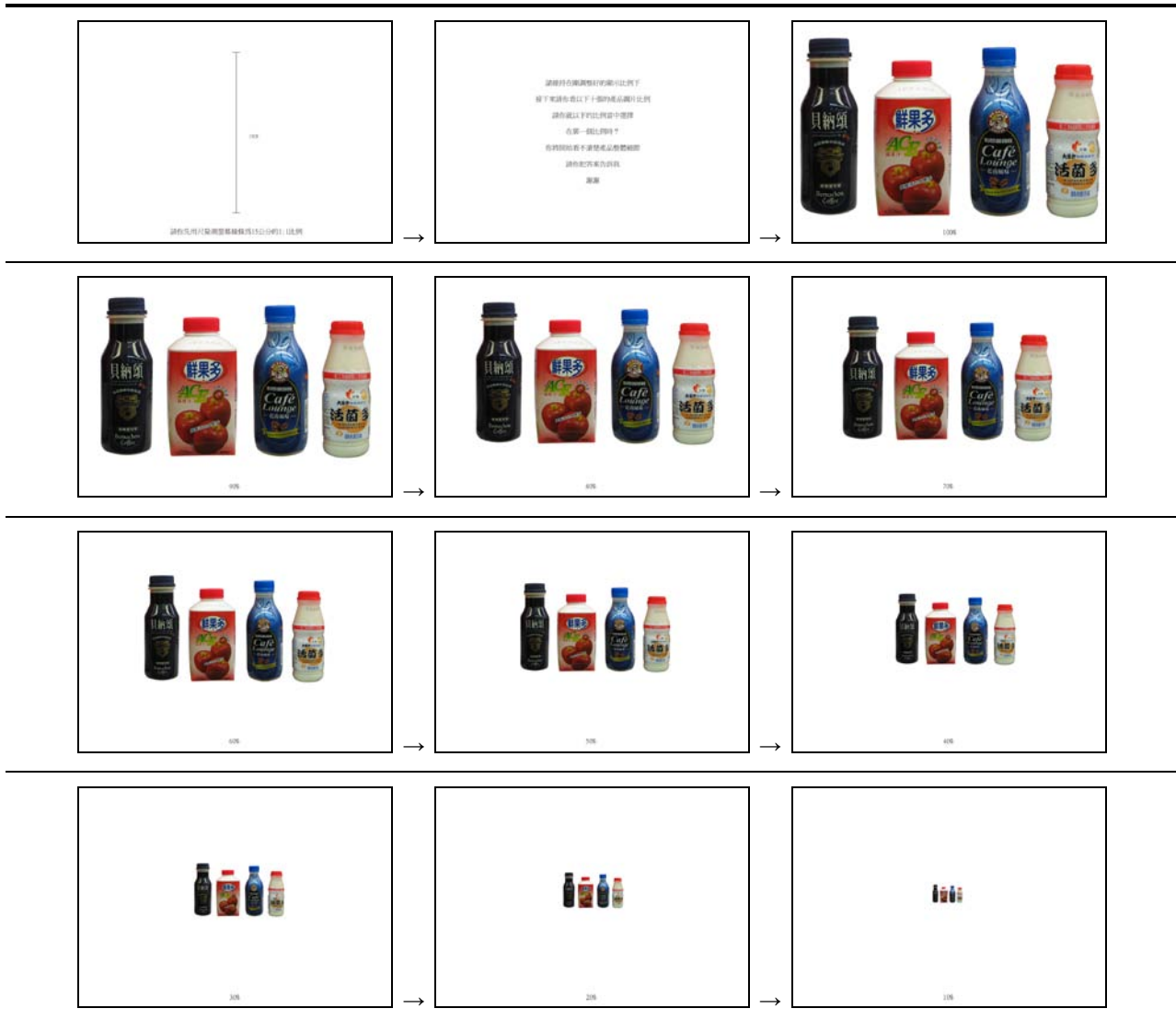
- (i) From naturalistic observation, products with plastic bottles are the most common in the market. Thus, for convenience, samples were chosen from products with plastic bottles.
- (ii) Samples with identical shapes and surface designs and packaging designs with similar sizes were excluded from this thesis to diversify the survey samples. When package designs were approximately identical, one article was selected at random. Four hundred twenty-eight actual samples were finally collected.

Design and Creation of Test Samples

Samples were presented in picture cards during the focus group interviews. The sample pictures were made and designed as follows:

- (i) Given the cost and interview space, shrunken cards were employed in this study. Four pieces of packaging bottles with the smallest sizes were selected from the samples. Colorful cards were made to represent the real objects visually. The figures were drawn in proportion (10-100%) to the actual sizes of the products. A total of 10 cards were made (see Table 1).
- (ii) Subsequently, 16 volunteer testees (aged 20-42) were invited to conduct the visual reading test on the surface information found on the bottle packaging. From the 10 cards, they

selected those with unclear proportion thresholds. After self-judgement on the visual threshold value of the product packages, 2 testees were able to read the contents of the 10% card, 7 for the 20% card, and 8 for the 30% card. Sampling cards with a size of 30% of the actual product were made using 10×10 cm cards.



©Selection of Samples and Testing Procedure

Before testing, the size of the screen was adjusted to the actual proportion of 1:1 after measuring by a ruler. The testees were told to look at the 10 pictures of the product and to choose their threshold values only by subjective judgment. The researchers recorded and indicated the values. Finally, the most reasonable minification of the product card was determined.

Table 1 Size of card, samples, and procedure

Display of Samples

The testing place was set in a quiet and closed assembly room to make the focus group interview run smoothly and to avoid any outside interference. Ordinary lighting was provided (see Figure 2).



Figure 2 Focus group interview and sample display

Selection of Testees

Sixteen volunteer testees, aged 23 on average, were invited to participate in the focus group interview. They were grouped according to gender and frequency of product consumption (buying at least once a week in the hypermarket).

Implementation Procedure of the Focus Group Interview

The researcher induced the group members to express their opinions on the factors that can help them recognize the differences in the given samples. Their responses were timely recorded. To determine the mental working mode of the testees, they were asked to carry out hierarchical grouping tasks on the packaging design differences (Chang, 2007; Chang & Wu, 2009; Peeper, Shrestha & Oliva, 2004; Ramanarayanan, Bala, Ferwerdab & Walter, 2008). A hierarchical grouping task is used to resolve the problem of categorizing heavy and complicated data, while clustering is a way to group apparently similar objects together and to sort data into new types (Chang, 2008; Guo, Peuquet, & Gahegan, 2002; Peeper, Shrestha, & Oliva, 2004; Sherrill, Moy, Reilly, & Bonato, 2005).

Differences among packages were discussed among the focus group members, and proper and rational ways of classifying the packages into two groups were found. The group members continued the sorting until a single sample was identified. To avoid fatigue caused by the long group interview, which might influence the interview quality, a five-minute break was taken every 30 minutes. The entire interview ran for nearly 270 minutes. Its implementation procedure and agenda are shown in Figure 3.

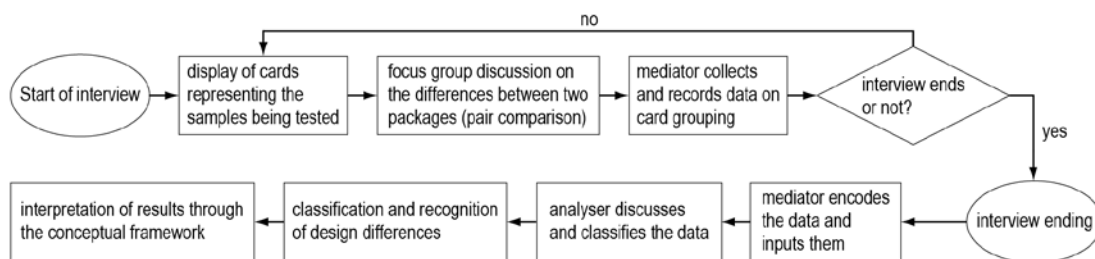


Figure 3 Implementation procedure of the focus group interview

Collection of Interview Data

The focus group interview process and the observations were recorded with a camera. The factors identified by the group members and their judging standards after two group differences were recognized and recorded. Protocol analysis was subsequently carried out. The ATLAS.ti software was used to deal with the content emphasis of the focus group interview on the aspect of data input (Figure 4). A conceptual network chart (see Figure 5) was set to complete the interpretation of the conceptual framework.

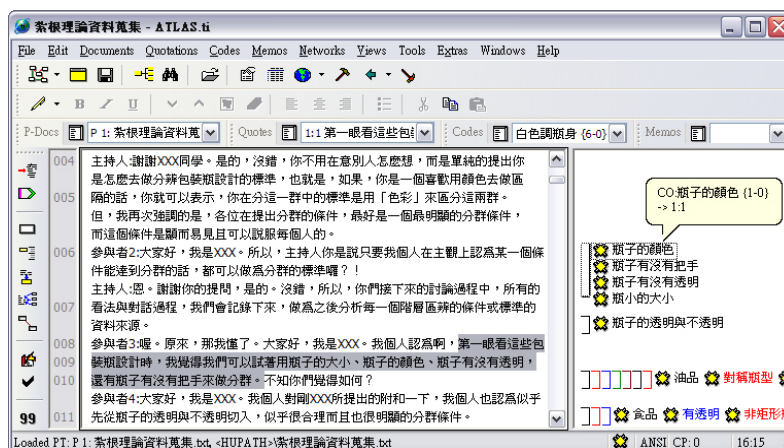


Figure 4 Data sort-out by ATLAS.ti and the decoding process

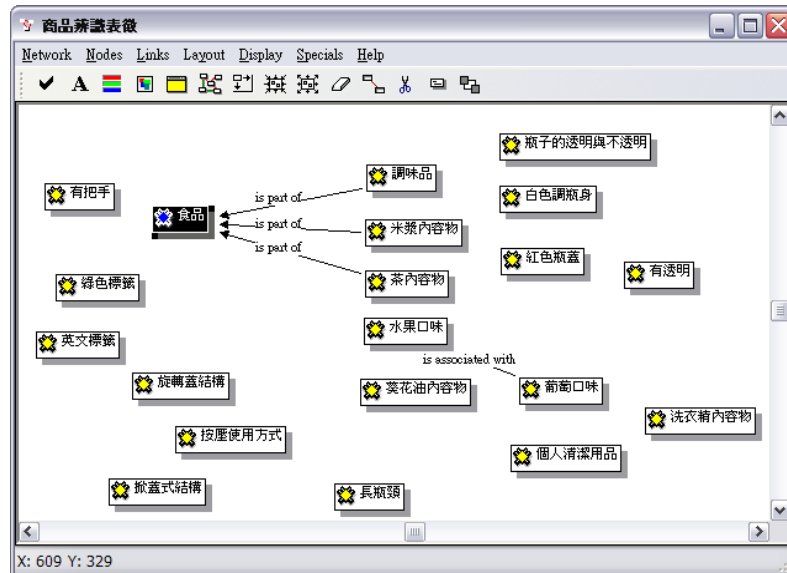


Figure 5 Grounded conceptual network

Establishment of the Grounded Analysis Model

There are three relevant grounded theory designs: open coding, axial coding, and selective coding. Open coding is a process designed to find the conceptual and attributive faces of the defined data. It can be used in conceptual categorization, induction, and transforming and focusing data. Axial coding deals with correlative categories and sub-categories, while selective coding involves a process of integrating and refining to construct a scientific theory needed to interpret the differences in packaging designs.

Table 2 presents the textual analysis results and their corresponding explanations. According to the selective coding in the table, the focus group was influenced by different variables in the identification of the differences among the packaging designs. The group members tended to change their opinions according to their individual perception, memory, association of the package content with the actual product, and the interaction among various visual searching interference variables. Cognitive factors that aided the focus group in determining the differences among packaging designs were further analyzed and generalized. A conceptual framework created to interpret properly the findability of a package is shown in Figure 6.

	Stage One		Stage Two		Stage Three
Open Coding	Instruction	Axial Coding	Instruction	Selective Coding	Instruction
Package content	Identify the contents of the product being tested	Item	Distinguish products through their item differences	property of commodity	Judge the property of commodity to determine package design differences
Users' group	Identify the product being tested				
Product's flavor	Identify the contents of the product being tested				
Usage of product	Identify the use of the test object				
Name of commodity	Identify the information relevant to the name of the commodity being tested	Naming of the brand	Distinguish products by identifying the differences		
Brand name	Identify brand information in the commodity being tested				
Manufacturer	Identify manufacturer information on the test object				
Language	Comprehend the language used in introducing the commodity	Language used on the label	Distinguish products in terms of the language used on the labels	Design of the label	Judge the design label to determine the design differences in the appearance of the packaging
Image	Identify specific images on the test object	Image of volume label	Distinguish products through image differences		
Abstract graph	Identify the abstract graph on the appearance of the test object				
Color matching on the label	Identify the color matching on the appearance of the test object	Color of the label	Distinguish products according to differences in label colors		

Predominant color of label	Identify the predominant color of the entire test object				
Size of the package bottle	Identify the appearance or capacity of the testing object	Capacity of the bottle	Distinguish products by capacity differences	Shape design of the bottle	Judge shape designs to determine the design differences
Length of the bottle's neck	Determine the length of the bottle's neck from its appearance	Height of the bottle's neck	Distinguish products through the length difference in bottles' necks		
Length of the body	Determine the length of the bottle's body from its appearance	Height and width of the bottle's body	Distinguish product in terms of the size of the bottle		
Width of the body	Determine the width of the bottle's body from its appearance				
Angle of the bottle's shoulder	Determine the angle of the bottle's shoulder from its appearance	Angle between the shoulder and neck of the bottle	Distinguish product by the angle of the shoulders of the bottles		
Lifting-type bottle cap	Identify the lifting-type cap used near the bottle's mouth	Usage of the bottle's mouth			
Bottle mouth with press structure	Identify the press structure designed on the bottle's mouth				
Nozzle bottle mouth	Identify the nozzle designed at the bottle's mouth				
Turning-mold cap	Identify the turning-mold cap set near the bottle's mouth				
Bottle without a handle	Identify the handle designed near the bottle's mouth	Practicality of the handle	Distinguish products through the structure of the handles		
Bottle with a handle	Identify the handle designed on the body of bottle				
Color of the bottle cap	Identify the color matching on the bottle cap	Color of the bottle cap	Distinguish the products by the differences in the color of bottle caps		
Color of bottle's body	Identify the color matching on bottle's body	Color of the bottle	Distinguish the products by the colors of the bottles (body)		
Lines on the bottle's body	Identify the shape lines on the bottle's body	Shape of the body	Distinguish the product by the differences in bottle shapes		
Shape of bottle	Identify the external shape of the bottle's body				
Popularity	Acknowledge the popularity of the test object	Memory	Distinguish the products by popularity and memory	Interfering factors	Identify the factors influencing the recognition of packaging designs
Familiarity	Acknowledge the testee's memory of the test object				
Association	Associate the information about the images of the test object	Cognition	Distinguish the products through the differences in relevant design		
Distinguishing sequence	Arrange the actions stimulated by the test object	Attraction	Distinguish the products by the attraction they generate during a visual search		

Table 2 Overall instructions for open coding, axial coding, and selective coding

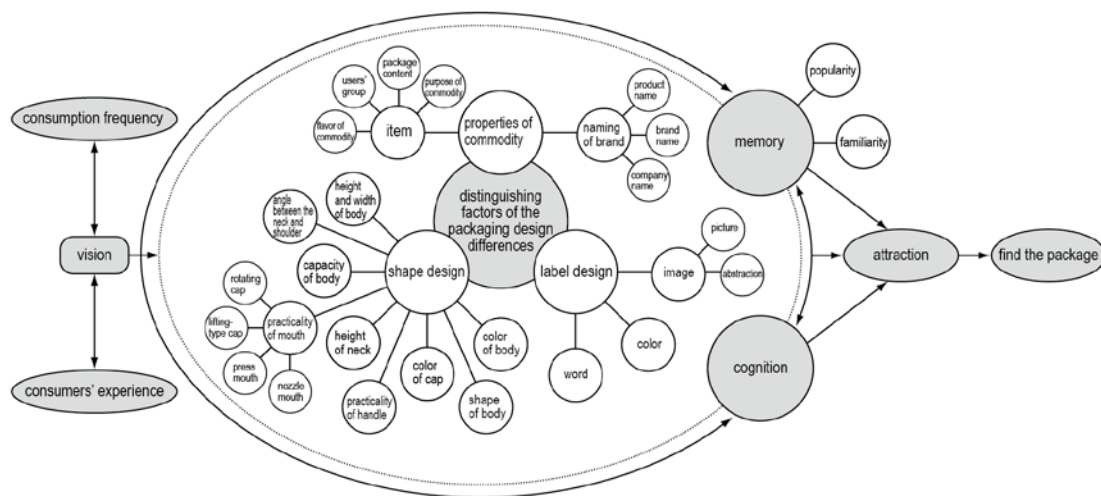


Figure 6 Conceptual framework of the focus group's interpretation of the packaging design differences

Results of the Investigation on the Factors Affecting Package Design Differences

Property of commodity, label design, and design of bottle shape in selective coding were defined as "trade dress" in this research. Based on these codings, statistical analysis was employed to determine the factors affecting package design differences.

Hierarchical Summarization of the Distinguishing Factors

After being identified by the focus group, a single independent sample was separated until it reached the fifth stage when pairing groups were distinguished one by one (see Table 3). As observed from the hierarchies tested, the total samples were up to 300 from the 5th to the 9th hierarchy. The distinctions were completed at a qualifying rate of 70%. From the result, it can be seen that the finished hierarchies were influenced by the quantity of the commodities when the consumer identified the differences among packaging designs from a heap of complex commodities. However, it does not mean that distinguishing the differences in the packaging designs would be easy with fewer commodities.

Number of Hierarchies	1	2	3	4	5	6	7	8	9	10	11	12	Total
Number of Samples	0	0	0	0	4	33	54	99	110	71	36	21	428
Proportion (%)	0	0	0	0	0.93	7.71	12.6	23.1	25.7	16.6	8.41	4.91	100

Table 3 Number of testing samples completed in each hierarchy distinction and their proportions

Summary of Classifications of Trade Dress in the Differences in Packaging Design

The quantity of classifications of trade dress was further explored when the focus group distinguished the differences in packaging designs (see Table 4). There was no absolute standard in grouping the focus group, but the distinguishing trade dress was found in the design differences among various groups. Therefore, similar items of trade dress could be adopted for grouping. The distinguishing factors of the different classifications of trade dress were only adopted in the statistical computations.

Layer	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Number of the Sample	0	0	29	113	132	92	52	10	0	0	0	0	0	0	428
Proportion (%)	0	0	6.78	26.4	30.8	21.5	12.1	2.34	0	0	0	0	0	0	100

Table 4 Amount of classification of the testing samples and their proportion after distinguishing in each hierarchy

Five trade dress classifications were employed by the focus group to complete their distinction of 132 pieces of test packaging samples in this research, accounting for 30.8% of the total test sample. Four trade dress classifications were then used on 113 pieces, accounting for 26.4%, and then six trade dress classifications were adopted on 92 pieces, accounting for 21.5% of the total test sample. These three numbers of trade dress classifications added up to 80%, which clearly indicated that four to six items are inclined to be used in distinguishing packaging design differences.

To illustrate the outline of the packaging design differences, proportions of trade dress classifications leading to the differences used by the focus group as distinguishing factors were calculated. "Item" in the classification of trade dress has the highest frequency of employment at 65 times. This means that "item" is used by consumers as a distinguishing factor 24.90% of the time. Subsequently, "shape of bottle" was used 46 times (17.62%) and "color of bottle's body" was used 44 times (16.86%). Other classifications of trade dress were employed for less than 10% of the time (see Table 5).

Based on the above analysis, three classifications of trade dress (i.e., item, shape of bottle body, and color of bottle's body) are inclined to be used as the axis of distinction by the focus group,

accounting for 60% of all the classifications of trade dress. On the contrary, words on labels and image on the labels were ignored by the focus group; both of these classifications were below the usage frequency of 1%. This phenomenon reflects the consumers' personal experience and habit. The transparency of the package bottle was also noticed by the focus group. The color of the package bottle was deemed an important factor in its findability. If a product's color is more different from that of the rest, then it will be found more easily.

Classification of trade dress	1	2	3	4	5	6	7	8	9	10	11	12	Frequency(n)	Proportion (%)	Preference sequencing
Item	-	1	1	5	4	9	10	11	14	6	3	1	65	24.90	1
Shape of bottle's body	-	-	-	-	-	4	10	15	9	3	3	2	46	17.62	2
Color of bottle's body	1	-	-	2	7	10	5	9	5	4	1	-	44	16.86	3
Naming of brand	-	-	-	-	-	-	4	6	5	2	2	1	20	7.66	4
Color of bottle cap	-	-	-	-	2	2	5	1	1	5	1	2	19	7.28	5
Height and width of bottle body	-	-	-	-	-	-	2	5	3	3	3	2	18	6.90	6
Usage of bottle	-	-	2	1	1	3	3	-	2	2	-	-	14	5.36	7
Capacity of bottle	-	-	-	-	-	2	2	3	2	-	2	-	11	4.21	8
Color of label	-	-	-	-	1	-	2	2	-	1	-	-	6	2.30	9
Practicality of handle	-	1	1	-	1	-	-	2	1	-	-	-	6	2.30	
Angle between shoulder and neck of bottle	-	-	-	-	-	-	2	-	2	1	-	-	5	1.92	10
Length of neck	-	-	-	-	-	-	1	1	-	1	-	-	3	1.15	11
Language used on the label	-	-	-	-	-	-	-	-	1	-	1	-	2	0.77	12
Image of volume label	-	-	-	-	-	-	-	1	1	-	-	-	2	0.77	
Total													261	100.00	

Table 5 Classification table of trade dress in distinguishing the differences among packaging designs by the focus group

Summary of the Trade Dress of Package Design Differences

All the frequencies were summarized to compare with the importance of trade dress represented by each classification (Tables 6 and 7). Based on the proportion of trade dress, the “shape of bottle” is the key factor in distinguishing packaging design differences used by the focus group, accounting for more than 50%, which is greater than “property of commodity” and “label design.”

In Table 5, “item” is used with the highest frequency in the classification of trade dress. But this doesn't make “item” inferior to “color of bottle” as a distinguishing factor in the first hierarchy of distinction. It can be explained that various kinds of commodity packages cover diverse categories and items of many products. This leads to their complexity, and thus they cannot be divided simply by item classification. On the contrary, whether or not the bottle is transparent is distinct on the first stage as a distinguishing trade dress classification. In the second stage, the property of commodity and shape of bottle compete with each other during the course of distinguishing packaging design differences.

Classification of trade dress	Usage frequency (n)	Proportion (%)	Sequencing of usage preference
Commodity's property	85	32.57	2
Shape design of the bottle	166	63.60	1
Design of the label	10	3.83	3
Total	261	100.00	

Table 6 Classification table of trade dress for distinguishing packaging design differences by the focus group

Trade dress/ Classification of trade dress	1	2	3	4	5	6	7	8	9	10	11	12
Property of commodity												
Item	-	•	•	•	•	•	•	•	•	•	•	•
Naming of brand	-	-	-	-	-	-	•	•	•	•	•	•
Design of the label												
Words	-	-	-	-	-	-	-	-	•	-	•	-
Image	-	-	-	-	-	-	-	•	•	-	-	-
Color	-	-	-	-	•	-	•	•	-	•	-	-
Shape design of bottle												
Capacity of body	-	-	-	-	-	•	•	•	•	-	•	-
Length of bottle's neck	-	-	-	-	-	-	•	•	-	•	-	-
Height and width of bottle	-	-	-	-	-	-	•	•	•	•	•	•
Angle between shoulder and neck	-	-	-	-	-	-	•	-	•	•	-	-
Usage of bottle's mouth	-	-	•	•	•	•	•	-	•	•	-	-
Practicality of the handle	-	•	•	-	•	-	-	•	•	-	-	-
Color of the bottle cap	-	-	-	-	•	•	•	•	•	•	•	•
Color of bottle's body	•	-	-	•	•	•	•	•	•	•	•	-
Shape of bottle's body	-	-	-	-	-	•	•	•	•	•	•	•

Table 7 Distribution table of the classifications of trade dress for distinguishing packaging design differences by the focus group

Conclusion

This research investigates how consumers sense and distinguish differences in package designs from the commodities on sale. This thesis is creative based on two points. First, a focus group interview was employed to distinguish the differences among various packaging designs comprehensively. This thesis was not confined within the design elements. Second, hierarchical relations between the trade dress and the classifications of trade dress were assessed based on grounded theory designs. The property of commodity includes two classifications of trade dress, label design includes three classifications of trade dress, and the shape of the bottle includes nine (see Table 7 for details). The items of packaging design included in this research are more specific, and the results are more focused than those of previous research.

Significantly, label designs are worth our attention. When the focus group distinguished the differences among packaging designs, item or brand name, as a factor for distinguishing the hierarchy of two pairs of groups, was not emphasized (not included in the label design). Item and brand name were only emphasized when the groups with high homogeneity elements on the label, such as different words (Chinese vs. English or Japanese), different images (specific and abstract), or different colors, were taken as the distinguishing factors. However, there is a close relationship among item, brand name, and label design. None of the classifications of trade dress can exist on the bottle independently. However, the focus group was habitually inclined to regard them as a whole. Thus, the significance of the label design remains unclear.

As to the association with the commodity, consumers most easily and directly associated the item and brand name with the product content. Next, they associated the image, words, and color on the label with the product content. Finally, bottle shape was associated with the product content. Thus, with respect to the association between packaging design and product content, the trade dress is ranked from highest to lowest as property of commodity > label design > design of bottle shape.. More importantly, the distinction lies in the relationship between "trade dress" and "classifications of trade dress," which can better reflect the differences in packaging designs.

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