Summarizing the image adjectives for the construction of the picture database for lifestyle image board

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Abstract. Design targets the promotion consumers' motivation to buy more products, whose sensual appeal has become the core of design. This research targets at the lifestyles of three major groups of people in Taiwan: "high-tech groups", "LOHAS groups", and "quality groups". Using literature review, questionnaires, and expert interviews, the frequently used images syntaxes used in three major dimensions: product design, designers, and lifestyle clusters are collected and summarized into 237 items. These image syntaxes are further categorized and selected, yielding 122 image syntaxes in six categories. At last, experts in different areas of design are requested to pick frequently used image syntaxes in the primary stage when designing for these three groups in order to construct the appropriate image syntaxes used in and their association with different areas of design and lifestyle clusters. The results can become the foundation of the next stage of this research in order to construct a lifestyle oriented image board database.

1 Introduction

Nowadays, consumers tend to buy merchandise with sensual appeal instead of functional purposes. Moreover, consumers are motivated to purchase merchandise that appeal to them sensually. In addition, the goal of design is to motivate consumers into consuming; therefore, the sensual appeal of products has become the core of design. In order to achieve this goal, designers introduce many different methods in the design process to inspire their design thinking. An image board is one of the methods frequently used by designers. According to related studies, consumers that have purchased products designed with image board show to have more pleasure and satisfaction from them [1]. Therefore, positive and active meanings in the overall design of products can be derived by introducing image board in the process of design. [2]

In the process of preparing and making image boards, the researchers encountered a few problems: 1. Most of the image graphics are collected in accordance with the designers' experience and personal feelings, showing to be subjective. 2. The association between image graphics and consumer groups are subjectively decided by the designers, and do not always comply with the intended objectives. 3. Image graphics must be collected separately for each case, lowering efficiency. Moreover, graphics are mostly printed materials, occupying much space. And it is difficult to discard old materials to renew the archive. 4. When engaging in interdisciplinary and joint design, it is difficult to integrate the

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image boards prepared by different teams, exerting certain difficulties in cooperation or participation in exhibition or development. 5. The appropriateness of the images or themes communicated through the graphics is not examined.

Considering the problems, this research proposes to construct lifestyle image boards from a broader perspective with Baxter's (1995) method[3] to construct a graphic database with images associated to different consumers' lifestyles to solve the problems of time and energy exhausting in collecting pictures, and avoid positioning the pictures and grouping them with the designers' subjective views. In this stage, this research plans to find out the image adjectives corresponding to different lifestyles.[4]

2 Methodology

In order to further understand the association between lifestyle and product category, literature review, questionnaire, and expert interview are used as method in this research. It intends to finish the lifestyle image syntaxes used frequently in three different lifestyle clusters and products.

First, the researchers determined the three major lifestyle clusters with reference to E-ICP Taiwan Lifestyle Bible, 2014, [5] a marketing database that analyzes Asian consumers. Then, online questionnaire was conducted to collect the image syntaxes frequently used in product design. The questionnaire was completed voluntarily by net users, with 26 valid questionnaires. The age group falling between 19 and 30, 17 of them were working people, and 9 students. 12 of them had a design background, and 14 of them had no design background. Moreover, massive image syntaxes used frequently by designers were collected by reviewing related literature, newspaper, magazines, and more. Then, five professional designers with at least five years of experience in related fields were invited to attend the expert interview. They were requested to identify the syntaxes used frequently in design from the pool. At the same time, this research also collected and categorized image syntaxes related to three major lifestyles by reviewing related literature, newspapers, and magazines.

This research integrated the images syntaxes collected from three perspectives. Then five experts with at least five years of experience in design were invited to a focus group interview to categorize and delete the image syntaxes. The experts included four males and one female (as shown in Fig. 4), with ages between 30 and 50 years old. Two of them were design teachers in universities, and the other two were experts in the field of design. The last one was marketing expert, who contributed to point out the consumers' perspectives, with no design background.

The categorization of image syntaxes was conducted in three stages. In stage one, flash cards were made with all the integrated image syntaxes. They were categorized by experts with consensus derived from discussions in accordance with the similarities of the semantic meanings of the syntaxes. In stage two, the image syntaxes were further integrated in accordance with the similarities of images and the habitual similarities of the designers'' applications. In stage three, image naming was conducted with the materials categorized in stage two. In order to condense the large number of images derived after integration, the same group of experts was requested to choose the most appropriate syntax from each group of syntaxes.

This research invited six designers in different fields, including kitchenware, furniture, transportation, communication, and industrial machinery, to help fine-tune these syntaxes for convenient applicability in the designs of different products. These designers fell into the age group between 32 and 50, with at least 6 years of experience in design. During individual interviews, they were requested to pick the adjectives used in their areas and image syntaxes applicable in product design for the three major lifestyle clusters. During the interview, the features and pictures related to the three lifestyle clusters were introduced and provided for the designers' references. Then, the interviewees were requested to select the most frequently used image syntaxes in the three major lifestyle clusters.

3 Results and discussion

3.1 Investigation of lifestyle cluster

This research focus on the investigation of lifestyle clusters in Taiwan. At present, the database E-ICP Taiwan Lifestyle Bible (2014) constructed by Eastern Online Co Ltd provides very complete references to the lifestyle clusters and consumer behaviors in Taiwan. Therefore, this research consulted the databank and regarded the ten major lifestyle clusters as the sources of this project. From these ten lifestyle clusters, the research team has chosen three identifiable clusters with potential consuming ability as the targets. They is the "high-tech lifestyle cluster," "LOHAS lifestyle cluster," and "quality living lifestyle cluster," whose features are illustrated in Table 1:

Table 1. Ten major lifestyle clusters in Taiwan as shown in E-ICP 2014.

Lifestyle cluster	Personalities and features
High-tech lifestyle	Science and tech pro, high-tech lifestyle, innovative, anti-high-tech
LOHAS lifestyle	Self-regulated, self-complacent, indulging, wanderer, otaku
Quality living lifestyle	Active and adventurous, eager and enthusiastic, enjoy life, secluded and otaku, firm and steady

Remarks: The research design and statistics method of this table are results of the collaboration between Eastern Online and the Institute of Business Administration, NCCU.

3.2 Collection of adjectives

The adjectives were collected from three perspectives, including the adjectives used on wrappings, the adjective collections used frequently by designers, and adjectives of different lifestyle clusters.

3.2.1 Collection of adjectives used frequently on product design

Online questionnaire was conducted to collect the image syntaxes frequently used on product design. The questionnaire was conducted at random, opened to net users via the internet. The testees were requested to fill out the adjectives used frequently in design. The totals of 27 questionnaires were sent out, with 1 invalid questionnaire and 27 valid ones. Falling between the age of 19 and 45, 14 of the testees were working people, and nine of them were students. Eight of them were males, and 19 females, with 12 of them had backgrounds in design, and 14 of them had no design background. The total number of adjectives collected was 160, 31 of them had repeated twice or more. Nine of the testees expressed that they often used the term "practical;" six suggested the term "simple"; and five raised the term "handy." For the other repetitions, please consult Table 2. In Table 1, the figures listed behind the adjectives were the numbers of testees that used the terms frequents. For example, the number (9) means that nine of the testees use the term frequently.

Table 2. Results of the online investigation of the image syntaxes used frequently in design.

Practical (9)	Safe(4)	Streamlined(3	Humanistic(2)	Good-looking (2)	Chic (2)
Simple(6)	Magnificent(3)	Simplistic (3)	Refined (2)	Complicated (2)	Interesting (2)
Handy(5)	Durable (3)	Abstract (2)	Organic (2)	Fashionable (2)	Colorful (2)
Neat(4)	Creative(3)	Multifunctional (2)	Generous (2)	Pretty (2)	Amiable (2)
Luxurious(4)	Convenient (3)	Bright (2)	Cute (2)	Concise (2)	Amazing (2)
Hi-tech(4)					

3.2.2 Collection of adjectives used frequently by designers

From related literature [6-11], newspapers, magazines, and more, 188 adjectives used frequently by designers were collected. After reviewing, they were summarized into 144. Five experts were invited

to choose the image syntaxes used frequently by them. Two or more of them picked 34 frequently used image syntaxes, as shown in Table 3.

Table 3. Collections of adjectives used frequently by designers.

Classical	Harmonious	Clean	Neat	Vintage	Light
Leisurely	Bright	Fast	Elegant	Magnificent	Sensual
Lively	Convenient	Quiet	Stable	Refined	Symmetric
High-tech	Avant-garde	Comfortable	Natural	Cute	Proportional
Character	Gentle	Manly	Cool	Stylish	Cozy
Romantic	Soft	Traditional	Classy		

3.2.3 Collection of adjectives used by lifestyle clusters

From related literature [12,5], newspaper, magazines, and more, 148 image syntaxes used by LOHAS lifestyle clusters were collected. After revision, there were 60 adjectives. From the high-tech lifestyle clusters, 81 image syntaxes were collected. After revision, there were 51 adjectives. From the quality living lifestyle cluster, 108 image syntaxes were collected. After revision, there were 78 adjectives.

3.2.4 Categorization of the adjectives

254 image syntaxes from the three perspectives mentioned above were collected. Deleting the repeats, 234 were derived, and they were further categorized by experts. In stage one, the experts divided the 234 image syntaxes into 15 categories. In stage two, the experts condensed the 15 categories into 6 types. In stage three, these six categories were named, "image of everyday life" with 41 image syntaxes; "traditional image, 21 syntax images", "image of style," 15; "image of luxury," 55; "image of sustaining," 26; and "image of high-tech," 76.

Then, the experts selected the most frequently used images from the above and yielded 21 images of everyday life, 12 images of tradition, 12 images of style, 32 images of luxury, 16 images of sustaining, and 29 images of high-tech with the total of 122, as shown in Table4. Image syntax (2) implies the syntaxes selected by two or more experts(table 4).

Table 4. Image syntaxes (after abbreviating).

Image categories	Adjectives
Images of everyday life	Life (5), home (5), cozy (4), fresh (3), relaxing (3), stress-free (3), humanistic (2), leisure (2), safe (2), free (2), harmonious (2), warm (2), tranquil (2), hospitable (2), simple, plain, clean, elegant, pleasing, comfortable, light
Images of tradition	Cultural (5), traditional (5), reserved (3), silent (3), typical (3), conservative (3), solemn (2), well-behaved (2), vintage (2), rustic (3), sincere, careful
Images of style	Ultra-simplistic (4), streamlined (4), classical (3), geometrical (3), neat (3), organic (3), three-dimensional (2), smooth (2), simplistic (2), simple, heavy, soft
Images of luxury	Refined (5), lofty (4), quality (4), luxurious (4), brand-name (3), classy (3), high-class (3), chic (3), deluxe (3), magnificent (3), pricy (2), material (2), eye-catching (2), good taste (2), gorgeous (2), fashionable (2), charming (2), complicated (2), vivid, artistic, aesthetics, graceful, aesthetics, modern, delicate, visual, sensual, meticulous, quality, fancy, romantic, bright
Images of sustaining	Sustaining (5), environmental friend (5), natural (4), ecological (4), healthy (4), energy saving (3), natural (3), valuable (3), handy (2), generic (2), convenient, durable, sturdy, manageable, practical, hand-made
Images of high-tech	Digital (4), efficiency (4), avant-garde (3), efficient (3), intelligent (3), professional (3), hard (3), high-tech (3), rational (3), designed (3), future (2), multifunctional (2), popular (2), accurate (2), fashionable (2), intelligent (2), creative (2), innovative (2), novel (2), pioneer (3), unique(2), Synthetic, cold, urban, special, urban, effective, prompt, systematic, conceptual

3.3 Integration of image syntaxes used by different lifestyle clusters and in different areas of design

3.3.1 Investigation results of applications of image syntaxes used in different areas of design

Designers from different areas picked the most frequently used images syntaxes from 122 items, listed above, applicable in three different lifestyle clusters – the high-tech lifestyle cluster, LOHAS lifestyle cluster, and quality living lifestyle cluster, as listed in Table 5

Table 5. Image syntaxes frequently used by designers in different areas of design.

Area / Category		Kitchenware	Furniture	Vehicles	Computer appliances	Communication equipment	Machinery	Repetition rate
Everyday life	Humanistic	◎	◎		◎	◎	◎	83
	Pleasing	◎	◎	◎	◎			67
	Neat				◎	◎	◎	50
	………							
Tradition	Restrained	◎		◎	◎		◎	67
	Cultural		◎	◎	◎		◎	67
	Typical	◎	◎		◎		◎	67
	…………							
Style	Classical	◎			◎	◎		50
	Three-dimensional			◎	◎			33
	Organic	◎			◎	◎		50
	………..							
Luxurious	Expensive		◎	◎	◎	◎		67
	Quality		◎	◎	◎			50
	Brand name	◎	◎	◎	◎		◎	50
	…………							
Sustaining	Natural		◎	◎	◎	◎	◎	83
	Hand-made				◎			17
	Sustaining		◎	◎	◎			50
	………..							
High-tech	Artificial							0
	Future		◎	◎	◎	◎		67
	Conceptual		◎		◎			33
	………..							

3.3.2 Investigation results of applications of image syntaxes used in the lifestyle clusters

The designers in different areas were requested to choose the image syntaxes used in different lifestyle clusters to obtain more accurate image syntaxes. The image syntaxes without targeting at any specific realm used by the designers in different areas were analyzed. The survey found that as shown in table 6.

According to Table 6, when constructing the construction of databank, the image syntaxes are arranged with the following guidelines:
• Level 1: Used frequently by designers in various fields.
• Level 2: Used frequently by designers in various fields and sometimes by three lifestyle clusters.
• Level 3: Used by both designers in various fields and three lifestyle clusters.
• Level 4: Area-dependent in each lifestyle cluster.

Table 6. Investigation of the image syntaxes used in the lifestyle clusters of luxury, sustaining, and high-tech.

Category	Design Category	Classification	Images of vocabulary
Life Images	Kitchen supplies	Both	Humanity、 Pleasure Comfortable、 Life、 Relaxation、 Comfortable
		3 ethnic groups have	Humanity
	Furniture Design	Both	Humanity、 Pleasure、 Comfortable、 Harmony
		3 ethnic groups have	Humanity
	means of transport Design	Both	Pleasure、 Easy、 Comfortable、 Life、 Warm、 Harmony
		3 ethnic groups have	Harmony
	Computer Equipment	Both	Humanity、 Friendly、 Pleasure、 Austere、 Easy、 Homely、 Life、 Warm、 Refreshing、 Harmony、 Leisure、 Plain
		3 ethnic groups have	Humanity、 Life
	Communications equipment	Both	Humanity
		3 ethnic groups have	
	Industrial machinery and equipment	Both	Humanity、 Friendly、 Austere、 Easy、 Security、 Plain
		3 ethnic groups have	Humanity
Traditional Images	Kitchen supplies	Both	Introverted、 Quiet、 Rules
		3 ethnic groups have	………..

Source: This study investigated

Therefore, in this study the vocabulary of Images of extraction results shown in Table 7. The Construction database for design use, therefore, in order to extract Images of vocabulary designers use on all areas across two levels as the main basis for selection and coupled with individual lifestyle ethnic specificity Images of vocabulary. Overall, Life Images have 8 Images of vocabulary; Traditional Images have 6 Images of vocabulary; Style Images have 5 Images of vocabulary; Luxury Images have 11 Images of vocabulary; Technology Images have 12 Images of vocabulary. These images will be used as the second phase of stimulus vocabulary sample image of keyword selection. Therefore the image syntaxes summarized by this research are listed in Table 7.

Table 7. The image syntaxes summarized by this research are listed.

Level	Image of everyday life	Image of tradition	Image of style	Image of luxury	Image of sustaining	Image of high-tech
1	Humanistic Pleasing Simple Casual Comfortable Home Safe Everyday life Harmonious	Restrained Cultural Typical Well-behaved Vintage Traditional	Classical Organic Soft Smooth Streamlined Ultra-simplistic Concise Simple Neat	Expensive Quality Good taste Brand name Fashionable High-class Elegant Extravagant	Natural Sustaining Ecological Ease Durable Healthy Energy saving Practical Environmental friendly	Future Multi-functional Systematic Accurate Hi-tech Efficiency Special Hi-intelligent Professional Design Digital

2	Humanistic Pleasing Comfortable Everyday life	Restrained Typical Vintage Rustic	Streamlined Ultra-simplistic Neat Simple	Brand name Good taste Fashionable Quality Expensive Quality	Healthy Natural Sustaining Ecological Ease Energy saving Practical Environmental friendly	Hi-tech Efficiency Efficacy Hi-intelligent Professional Design Innovative Future Digital Conceptual
3	Humanistic Harmonious Everyday life	Vintage Restrained Cultural Rustic	Neat Three-dimensional Simple	Expensive Good taste Fashionable Quality Artistic High-class Fine	Natural Ecological Generic	Hi-intelligent Future Effective Accurate Urban Creative Innovative
4	Unrestrained Clean Graceful Warm	Careful		Fashionable Charming Refined Complicated Romantic	Handy Hand-made Value	Cold Avant-garde Popular

This research had collected 237 image syntaxes from three lifestyle clusters: the "high-tech cluster," "LOHAS cluster," and "quality living cluster," which are used frequently in product designs by designers and lifestyle clusters, through a literature review, questionnaire, and expert interview as its research method. Then focus group interviews with experts were conducted to select and categorize these syntaxes further to yield 122 image syntaxes in six categories. At last, experts in different fields picked the most frequently used image syntaxes from these 122 images to derive adjectives applicable in the three major lifestyle clusters to construct the relationships between different areas of design, different lifestyle clusters, and image syntaxes. The research results will be used in the studies in the next stage to construct the foundation lifestyle oriented image board database.

This research discovered that there is no significant different regarding the designers' cognition of the applicability of the image syntaxes in these three lifestyle clusters. It will be helpful in the collection of graphics, positioning, and grouping in the next stage. Eventually, there are still quite a number of terms derived from the shrinking of the 122 image syntaxes in three stages. These image syntaxes will be further selected in the next stage by the people in the three mentioned lifestyle clusters upon request to render these image syntaxes closer to the everyday life needs in each cluster.

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