

A Study of the Feature of the Lovely Product Forms

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Abstract. The appealing points of a product are not only “good function” and “easy to use”, but also “lovely form” for a consumer. Especially it is true for a window shopping or an internet shopping. Many studies have shown that a product looked lovely is more welcomed. If product features made products looked lovely are analyzed and singled out, product designers can easily apply them in the concept development stage. This study was conducted by two phases: a questionnaire survey and a feature analysis of product that looked lovelier. This paper concludes several important findings which are: 1. A structure scale for measuring form features is established. 2. The form features of the loveliest products, the form features of lovelier product between male and female, and the form features of lovelier product among different age groups are identified.

Keywords: Lovely form · Product feature · Feature analysis

1 Introduction

The appealing points of a product are not only “good function” and “easy to use”, but also “lovely form” for a consumer. Successful story of Swatch is a good example. Especially it is true for a window shopping or an internet shopping [1]. Consumers are usually attracted by a product form first before they really buy and use it. A product form may become a most important factor to influence their purchase intent. Therefore, a product designer should fully understand the consumer preference of product form, so that these products would get extra winning edge in a competitive marketplace. Many studies have shown that a product looked lovely is more welcomed [2, 3]. Lorenz revealed that location proportion of eye, nose, mouth to face of baby animal is quite different from grow-up. Baby animals always looked lovely no matter how fearful when they grow up [4]. This may implies that specific features may cause lovely image. If product features made products looked lovely are analyzed and singled out, product designers can easily apply them in the concept development stage [5]. Furthermore, this study aims at exploring product features that make a product looked lovelier and their differences between male and female consumers as well as among the different age groups. It is hope that this study would help designers to know better the product feature that create lovelier image.

2 Research Method

This study was conducted by two phases: a questionnaire survey and a feature analysis of product that looked lovelier.

2.1 Questionnaire Survey

As for the questionnaire survey, 1000 photos of product for daily use were collected from 61 well known brands from their official websites. Several screening processes were then taken to eliminate those were not looked lovely. Finally, 33 product photos were selected as the sample of the survey.

For questionnaire design, a 9-point Likert scale was measured to indicate the extent of lovely image of these product samples. The questionnaire survey took place from December 2012 to February 2013 through internet and hard copy questionnaire for those ages over 45. Experimental variables include gender and age. A total of 254 valid questionnaires were collected. Among them, there were 95 males (41.1 %) and 136 (58.9 %) females. There were 5 (2 %) age under 19, 83 (36 %) age between 20–31, 62 (27 %) age between 32–43, 65 (28 %) age between 44–55, 17 (7 %) age over 5 in terms of age.

The outcome of the questionnaire survey included the lovely ranking of the product samples, the identification of the product samples with a significant lovely difference between male and female subjects through t-test, as well as among the different age group subjects through ANOVA and Sheffee.

2.2 Feature Analysis of Product that Looked Lovelier

In order to indicate the features of lovely products, a structure measuring scale modified from previous researchers [6–8] was established in advance. The product features are indicated by aspects of color treatment, form element, detail treatment and texture. There are 4–5 items for further indication of each aspect. For example, color treatment can be further indicated by items of warm-cold color, bright-dark color, number of colors, and relation between colors. For each item, there are 3 choices. In warm-cold color, 3 choices are mainly hue is cold colors, Hue is cold and warm colors in half-and-half, and mainly hue is warm colors. In bright-dark color, 3 choices are mainly brightness is dark colors, Brightness is dark and bright colors in half-and-half, and mainly brightness is bright colors. In number of color, 3 choices are mainly color scheme is single hue, Color scheme is between single hue and multiple hues, and mainly color scheme is multiple hues. In relation between colors, 3 choices are mainly color scheme is contrast colors, Color scheme is contrast and harmony colors in half-and-half, and mainly color scheme is harmony colors. One of them considered most appropriate to represent the feature of that item is picked. Six experienced designers together with the researchers used this scale to measure the features of product samples. The product feature of every item was decided by common consensus among these people.

3 Result of Research

3.1 Features of the Most Lovely Products

The statistic results of the questionnaire survey on the participants’ ranking of lovely image of sample product are shown in Table 1. The top six most lovely products are sample 8 (M = 7.33), sample 9 (M = 7.21), sample 24 (M = 6.95), sample 11 (M = 6.62), sample 2 (M = 6.58), sample 3 (M = 6.58).

The feature of these 6 samples were picked as Table 2. If more than 4 samples are picked as feature of a item, that choice is considered as the indication of that item. The result of Table 2 was then concluded as Table 3 to show features of the loveliest products. It is noted that products with the following features are more likely to be considered as lovelier: (1) color treated mainly in cold and bright colors, color scheme is between single hue and multiple hues, and mainly color scheme is harmony colors; (2) In terms of form element, totally bionic, mainly organic, mainly symmetric, and form is between single shape and polymorph; (3) In terms of detail treatment, mainly rounded form, functional and decorative in half-and-half, more detail features, and graving type; (4) In terms of material treatment, mainly hard, mainly rough (matte), mainly consistent, not reflective, and not transparent.

Table 1. The ranking of lovely images on analyzed samples















Ranking	No.	Mean	Sample	Ranking	No.	Mean	Sample	Ranking	No.	Mean	Sample
1	8	7.33		12	18	6.22		21	17	5.91	
2	9	7.21		13	4	6.16		24	20	5.85	
3	24	6.95		14	14	6.12		25	25	5.74	
4	11	6.62		14	10	6.12		26	19	5.66	
5	2	6.58		16	16	6.09		27	26	5.64	
6	3	6.58		17	15	6.08		27	31	5.64	
7	32	6.34		18	21	6.05		29	28	5.45	
8	22	6.31		19	29	6.05		30	5	5.44	
9	30	6.28		20	7	5.96		31	6	5.42	
10	23	6.27		21	27	5.91		32	33	4.95	
11	1	6.24		21	13	5.91		33	12	4.56	

Table 2. A survey of form features on lovely images

		Form Features	Sample No.					Sum				
			2	3	8	9	11		24			
C o l o r	1	1	Mainly hue is cold colors	•	•	•	•	•		5*		
		2	Hue is cold and warm colors in half-and-half								0	
		3	Mainly hue is warm colors						•		1	
	2	1	Mainly brightness is dark colors								0	
		2	Brightness is dark and bright colors in half-and-half				•				1	
		3	Mainly brightness is bright colors	•	•	•		•	•		5*	
	T r e a t m e n t	3	1	Mainly color scheme is single hue	•	•					2	
			2	Color scheme is between single hue and multiple hues			•	•	•	•		4*
			3	Mainly color scheme is multiple hues								0
	4	4	1	Mainly color scheme is contrast colors				•				1
			2	Color scheme is contrast and harmony colors in half-and-half						•		1
			3	Mainly color scheme is harmony colors	•	•	•		•			4*
F o r m	1	1	Totally bionic		•	•	•	•	•		5*	
		2	Partly bionic	•							1	
		3	No bionic								0	
	2	1	Mainly geometric								0	
		2	Geometric and organic in half-and-half	•							1	

(Continued)

Table 2. (Continued)

	3	3	Mainly organic		•	•	•	•	•	5*
		1	Mainly symmetric		•	•	•	•	•	5*
		2	Symmetric and asymmetric in half-and-half							0
	4	3	Mainly asymmetric	•						1
		1	Mainly single shape							0
		2	Form is between single shape and polymorph	•	•	•	•			4*
	D e a t i a l T r e a t m e n t	1	3	Mainly polymorph					•	•
1			Mainly rounded form	•	•	•	•	•	•	6*
2			Rounded and sharp in half-and-half							0
2		3	Mainly sharp form							0
		1	Mainly functional							0
		2	Functional and decorative in half-and-half	•	•	•	•	•	•	6*
3		3	Mainly decorative							0
	1	More detail features		•		•	•	•	4*	
	2	Moderate detail features	•		•				2	
4	3	Less detail features							0	
	1	Printing type							0	
	2	Graving type	•	•	•	•	•	•	6*	
M a t t e r i a l t r e a t m e n t	1	3	Pierced type							0
		1	Mainly soft							0
		2	Soft and hard in half-in-half					•		1
	2	3	Mainly hard	•	•	•	•		•	5*
		1	Mainly smooth		•					1
		2	Smooth and rough in half-in-half			•				1
	3	3	Mainly rough (matte)	•			•	•	•	4*
		1	Mainly consistent	•	•	•	•	•	•	6*
		2	Between consistent and diverse							0
	4	3	Mainly diverse							0
1		Reflective		•					1	
2		Reflective and not reflective in half-in-half							0	

Table 2. (Continued)

t	5	3	Not reflective	●		●	●	●	●	5*	
		1	Transparent							0	
		2	Transparent and not transparent in half-in-half								0
		3	Not transparent	●	●	●	●	●	●	●	6*

Table 3. Corresponding form features to lovely images of samples

Category	Item	Form features
Color treatment	1	Mainly hue is cold colors
	2	Mainly brightness is bright colors
	3	Color scheme is between single hue and multiple hues
	4	Mainly color scheme is harmony colors
Form	1	Totally bionic
	2	Mainly organic
	3	Mainly symmetric
	4	Form is between single shape and polymorph
Detail treatment	1	Mainly rounded form
	2	Functional and decorative in half-and-half
	3	More detail features
	4	Graving type
Material treatment	1	Mainly hard
	2	Mainly rough (matte)
	3	Mainly consistent
	4	Not reflective
	5	Not transparent

3.2 The Difference Between Male and Female to Features of Lovelier Product

After t-test, statistic results show that there are significant effects to sample 4, sample 5, sample 28, and sample 33 between female and male subjects (see Table 4). It is noted that the average scores of female subject are higher than male subject. This indicates that female subjects have a stronger agreement of lovely image to these samples.

Comparing the feature of these 4 samples, female subjects are easier than male subjects to consider products with mainly bright color, mainly symmetrical form, mainly rounded and mainly decorative detail treatment as lovely. Products are with mainly hard, mainly smooth, mainly consistent, reflective, and not transparent in terms

of material treatment (see Table 5). Comparing Tables 3 and 5, some items are different (items marked with *). This may indicate that female subjects have wilder reception of lovely features.

Table 4. Samples with significant level in t-test

No.	Sample	Male		Female		t-test	Sig.	Diff.	S.D.
		Mean	S.D.	Mean	S.D.				
4		5.74	1.93	6.45	1.48	-2.842	0.005*	-0.703	0.247
5		5.10	2.05	5.67	1.84	-2.104	0.037*	-0.570	0.271
28		4.92	2.14	5.82	1.96	-3.153	0.002*	-0.903	0.286
33		4.53	2.12	5.24	2.09	-2.371	0.019*	-0.701	0.296

Note: [*] indicates significant level <= 0.05

Table 5. Females agree form features with lovely images more than males

Category	Item	Form features
Color treatment	1	-
	2	Mainly brightness is bright colors
	3	-
	4	-
Form	1	-
	2	-
	3	Mainly symmetric
	4	-
Detail treatment	1	Mainly rounded form
	2	Mainly decorative*
	3	-
	4	-
Material treatment	1	Mainly hard
	2	Mainly smooth*
	3	Mainly consistent
	4	Reflective *
	5	Not transparent

Note: [-] indicates that the form feature does not exceed a half of samples

3.3 The Difference Among Different Female Age Groups to Features of Lovelier Product

After ANOVA analysis, statistic results show that there are significant different effects among different age groups (see Table 6). Further test of Sheffee, subjects of age group 44–55 (3) have higher scores than age group of 20–31 (1) to sample 5, sample 6, sample 10, sample 13, sample 14, sample 20, sample 26, sample 28, sample 31, sample 33 (3 > 1). (see Table 6). Subjects of age group 44–55 (3) have higher scores than age group of 32–43 (2) to sample 10, sample 13, sample 26, sample 28, sample 29 (3 > 2). Subject of age group 32–43 (2) have higher scores than age group of 20–31 (1) to sample 10, sample 24, sample 28 (2 > 1).

Comparing the feature of these samples, age group 44–55 are easier than age group of 20–31 that products with the following features are more likely to be considered as lovelier (see Table 7): (1) mainly bright color; (2) In terms of form element, totally bionic, mainly organic, mainly symmetric, and mainly polymorph; (3) In terms of detail treatment, mainly rounded form, functional and decorative in half-and-half, and graving type; (4) In terms of material treatment, mainly hard, mainly smooth, mainly consistent, reflective, and not transparent. Comparing the feature of these samples, there are similar results between age group of 44–55 and age group of 32–43. So are between age group 32–43 and age group of 20–31. This indicates that the older of female subjects the stronger reception of these features as lovely form.

Table 6. Age of female is significant by ANOVA analysis













No.	Sample	(1) 20-31	(2) 32-43	(3) 44-55	F	P	Scheffe
5		5.17	5.64	6.28	4.383	.015*	3>1
6		4.90	5.72	6.19	7.064	.001*	3>1
10		5.42	6.51	6.69	6.295	.003*	2>1 . 3>1
13		5.33	5.85	7.12	11.503	.000*	3>1 .3>2
14		5.17	6.24	6.79	7.985	.001*	3>1
20		5.17	5.85	6.69	11.235	.000*	3>1
24		6.69	7.64	7.12	3.114	.048*	2>1
26		5.10	5.55	6.69	9.250	.000*	3>1.3>2
28		4.73	5.97	6.95	18.704	.000*	2>1.3>1.3 >2
29		5.19	5.85	6.90	9.523	.000*	3>1.3>2
31		4.85	5.79	6.29	5.829	.004*	3>1
33		4.60	5.45	5.79	4.022	.020*	3>1

Table 7. Different age of female’s cognition of form feature on lovely images

Category	Item	3 > 1	3 > 2	2 > 1
Color treatment	1	–	–	–
	2	Mainly brightness is bright colors#	Mainly brightness is bright colors#	Mainly brightness is bright colors#
	3	–	–	Color scheme is contrast and harmony colors in half-and-half
	4	–	Mainly color scheme is contrast colors	–
Form	1	Totally bionic#	Totally bionic#	Totally bionic#
	2	Mainly organic#	Mainly organic#	Mainly organic#
	3	Mainly symmetric#	Mainly symmetric#	Mainly symmetric#
	4	Mainly polymorph#	Mainly polymorph#	Mainly polymorph#
Detail treatment	1	Mainly rounded form#	Mainly rounded form#	Mainly rounded form#
	2	Functional and decorative in half-and-half	Mainly decorative	Mainly decorative
	3	–	–	More detail features
	4	Graving type#	Graving type#	Graving type#
Material treatment	1	Mainly hard#	Mainly hard#	Mainly hard#
	2	Mainly smooth#	Mainly smooth#	Mainly smooth#
	3	Mainly consistent#	Mainly consistent#	Mainly consistent#
	4	Reflective#	Reflective#	Reflective#
	5	Not transparent#	Not transparent#	Not transparent#

Note: [–] indicates that the form feature does not exceed a half of samples

3.4 The Difference Among Different Male Age Groups to Features of Lovelier Product

After ANOVA analysis, statistic results show that there are significant different effects among different age groups. Further test of Sheffee, there are four relations among different age groups. They are 3 > 2, 1 > 2, 1 > 3, and 3 > 1 (see Table 8). Comparing the feature of these samples, the older of male subjects do not have stronger reception of these features as lovely form.

Table 8. Different age of male’s cognition of form feature on lovely images

Category	Item	3 > 2	1 > 2	3 > 1	1 > 3
Color treatment	1	Mainly hue is cold colors	–	Mainly hue is cold colors#	Mainly hue is cold colors#
	2	Mainly brightness is bright colors	Mainly brightness is bright colors	Mainly brightness is bright colors#	Mainly brightness is bright colors#
	3	–	Mainly color scheme is single hue	–	Mainly color scheme is single hue
	4	–	Mainly color scheme is harmony colors	–	Mainly color scheme is harmony colors
Form	1	–	–	–	–
	2	–	Geometric and organic in half-and-half	–	–
	3	Mainly symmetric	–	Mainly symmetric	–
	4	Mainly polymorph	–	Mainly polymorph	–
Detail treatment	1	–	Mainly rounded form	–	Mainly rounded form
	2	–	Functional and decorative in half-and-half	–	Functional and decorative in half-and-half
	3	–	Moderate detail features	More detail features	–
	4	–	Graving type	–	Graving type
Material treatment	1	Mainly hard	–	Mainly hard	–
	2	–	Mainly rough (matte)	Mainly smooth	Mainly rough (matte)
	3	–	Mainly consistent	–	Mainly consistent
	4	–	Not reflective	Not reflective	Not reflective
	5	Not transparent	Not transparent	Not transparent#	Not transparent#

Note: [–] indicates that the form feature does not exceed a half of samples

4 Conclusions

1. Products with the following features are more likely to be considered as lovelier: (1) color treated mainly in cold and bright colors, Color scheme is between single hue and multiple hues, and mainly color scheme is harmony colors; (2) In terms of form element, Totally bionic, mainly organic, mainly symmetric, and Form is between single shape and polymorph; (3) In terms of detail treatment, mainly rounded form, Functional and decorative in half-and-half, More detail features, and Graving type; (4) In terms of material treatment, mainly hard, mainly rough (matte), mainly consistent, Not reflective, and Not transparent.
2. Female subjects are easier than male subjects to consider products with mainly bright color, mainly symmetrical form, mainly rounded and mainly decorative detail treatment as lovely. Products are with mainly hard, mainly smooth, mainly consistent, reflective, and not transparent in terms of material treatment. Female subjects have wilder reception of lovely features.
3. Products with the following features are more likely to be considered as lovelier: (1) mainly bright color; (2) In terms of form element, totally bionic, mainly organic, mainly symmetric, and mainly polymorph; (3) In terms of detail treatment, mainly rounded form, functional and decorative in half-and-half, and graving type; (4) In terms of material treatment, mainly hard, mainly smooth, mainly consistent, reflective, and not transparent. There are similar results between age group of 44–55 and age group of 32–43. So are between age group 32–43 and age group of 20–31. This indicates that the older of female subjects the stronger reception of these features as lovely form.
4. Unlike female, the older of male subjects do not have stronger reception of features as lovely form.

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