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Consumer Preference and Image Perceptions to Classic Chairs

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Abstract. The study deals with the consumer's preference and image perceptions to classic chairs. 40 users were invited for the semantic differential experiment in which 18 representative classic chair samples were evaluated on a 9-pointed Likert scale. The results indicate that subjects in Taiwan market prefer classic chairs of modern, simple, soft, delicate, and unique styles. Moreover, the images of emotional and delicate dominate the subjects' preferences toward classic chairs. From morphological analysis, the subject's preference and image perceptions were transformed into design specifications for related product design.

Keywords: Classic Chair, Product Form Design, Image Perception, Kansei Engineering.

1. Introduction

Product form is important in that it can transmit messages and other characteristics to the consumers. According to Bloch (1995), user's psychological responses to product form can be classified into cognitive and affective response, which will determine what behavioural responses they may adopt, approach or avoid. For designers, it is a challenge for them to get the hints of customer's perceptions and transform these messages to design specifications for new product development.

Of all furnitures, chair has a unique status. Not just because people use it every day, designers usually create chairs from different aspects such as their shape, material, function and degrees of comfort. It is not too much to say that chairs are not just for physiological need, but also a way for designer to express their philosophy of design and aesthetics. Indeed, chairs may have deep meaning (Fiell, 2005). From today's social view, chairs are symbols of identity, status, personal style and taste.

In this study, the authors deal with the way consumers like and perceive the form of classic chairs. From a semantic differential experiment and quantitative analysis, the authors attempt to explore the psychological responses consumers have toward representative classic chairs. Special images highly and least preferred classic chairs are investigated. Moreover, the effects different form treatments have on consumer's preference and specific image perceptions are addressed. The findings obtained from the study can serve as references for designers in the design and development of similar products.

2. Literature Review

Consumer satisfaction with form plays an essential role in determining the success of a product (Cooper, Kleinschmidt, 1987). The visual perceptions of product form will affect the psychological aspects and finally influence their intention of purchase. The perceptions of the same product will vary with different cultural backgrounds. Aesthetics standards, and habits in daily life (Kobayashi, 1978).

According to Schultz (1984), consumers will rely on their perceptions rather than on the facts in making their purchase decisions. In other words, the decoding of product messages often comes from the schemas users consider important, true, and correct but not from the rational way of thinking. Such kind of consumer behaviour is referred to as a sound bite decision making. Under this kind of cognitive model, designers should make explicit and consistent in their product message. Following the consumer's way of perceiving product message will avoid the cognitive gap between users and designers.

In order to measure the emotional context of a product (like the perception of "Practical", "Simple" or "Compact" of a product), user involvement in the design process is necessary (Lebbon, McDonagh-Philp, 2000). Semantic Differential (SD) is the measurement instrument most commonly used by User-Centred

Design (UCD) techniques to obtain the emotional value of products (Osgood et al., 1957). SD has been applied in the design of street furniture (Maurer et al., 1992), office chairs (Hsiao, Chen, 1997), etc. In this study, SD was used to gather subject's perceptions and preferences toward classic chair samples. Then, from the quantification type I analysis, a sort of regression analysis, the effects form treatments of design elements have on preferences and image perceptions were investigated.

3. Experimental Design

In this study, the semantic differential method is used to gather the user's preference and perceptions of images related to classic chairs. 40 subjects were asked to evaluate 18 representative classic chairs according to their first impression of the classic chair images.

Subjects: 40 subjects (25 male, 15 female; Avg age: 34.5 years old).

Material: 100 chair samples were first selected from 1000 Chairs and 100 Classic Chairs. Then through a pilot test, 18 representative chairs were selected.

Questionnaire design: From related literature, nine image words and preference (Table 1) were covered in the perceptual questionnaire form of nine-point Likert Scale. On the evaluation scale, a nine-point score means that the subject has a very strong preference or image impression of the classic chair sample, while a one-point score for the least preference or image impression.

Procedure: Each subject was asked to evaluate 18 classic chairs according to the image word pair in every page. The evaluations were conducted individually and each subject was allowed to proceed at his or her own pace.

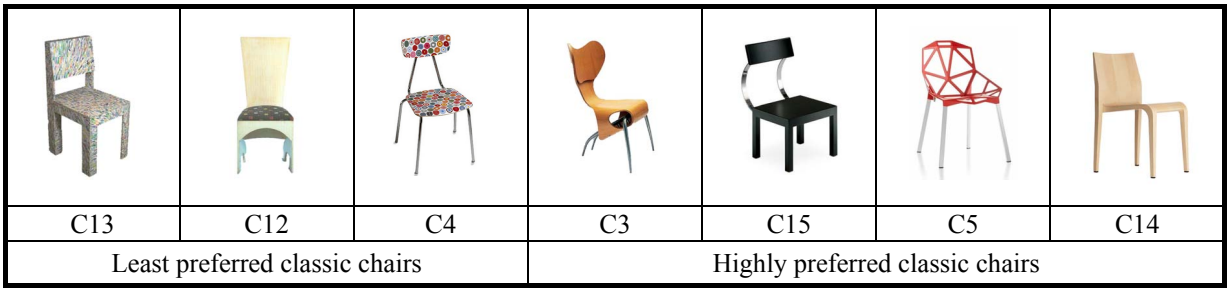
Table 1: Nine paired image words for the SD experiment

Adj1 Traditional - Modern	Adj2 Rational - Emotional	Adj3 Deco - Practical	Adj4 Complicated - Simple	Adj5 Heavy - Compact
Adj6 Hard -Soft	Adj7 Rough- Delicate	Adj8 Splendid - Plain	Adj9 Common - Unique	Dislike - Like

4. Results and Analyses

4.1. Image Profiles for Highly and Least Preferred Classic Chairs

With the ranking order of the average scores of subject's preference and image evaluation, highly preferred (>6.00) and least preferred (<4.00) classic chairs are specified. In Fig 1, classic chairs C3 (Empty Chair by Ron Arad), C5 (Chair One by Konstantin Grcic), C14 (Laleggera by Riccardo Blumer) and C15 (Follia by Giuseppe Terragni) are highly preferred while C12 and C13 are least preferred.



C13	C12	C4	C3	C15	C5	C14
Least preferred classic chairs			Highly preferred classic chairs			

Fig. 1: Highly and least preferred classic chairs.

Fig 2 and Fig 3 illustrate the image profiles of the highly and least preferred classic chairs. From them, highly preferred classic chairs feature the styles of modern, practical, simple, plain, and unique. On the other hand, the least preferred classic chairs are remarkably not practical, simple, and compact in terms of their styles.

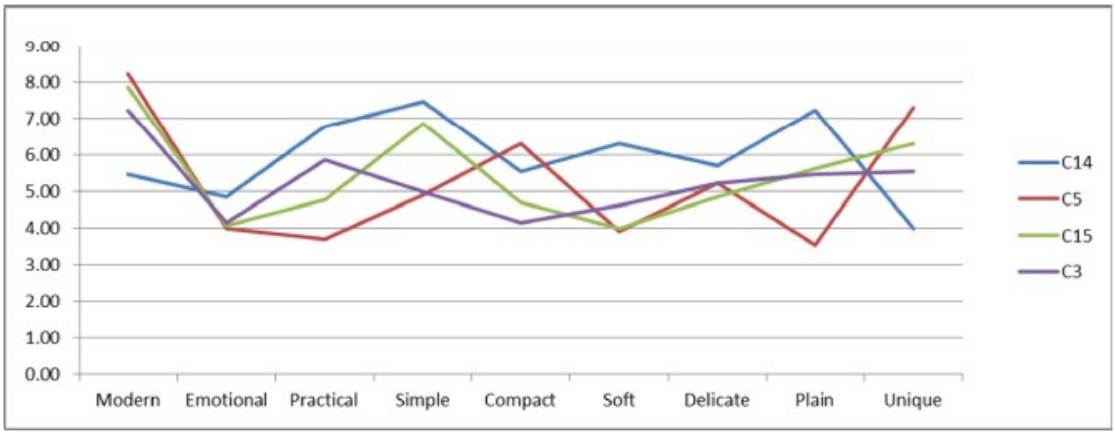


Fig. 2: The distribution patterns of images of highly preferred classic chairs.

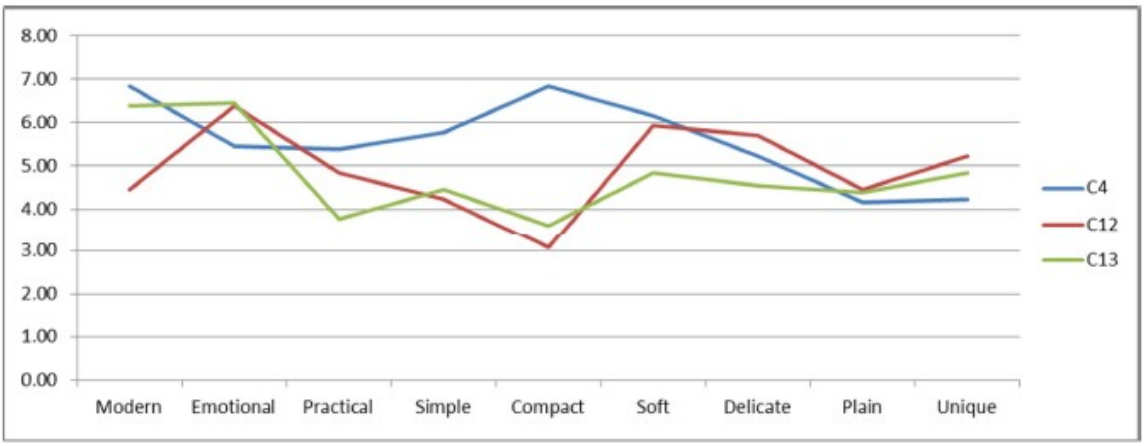


Fig. 3: The distribution patterns of images of least preferred classic chairs.

4.2. Correlation between Preference and Image Perceptions

To explore the way different image influences the subject's preference, a simple regression analysis was conducted. The output clearly indicated that most images have positive relationships with subject's preference whereas emotional and soft images have negative relations, with r_2=-0.487 and r_6=-0.146 respectively. For all images evaluated in the experiment, a multiple regression analysis was conducted.

From multiple regression (stepwise mode), two models can be found for the prediction of subjects' preference to classic chairs. The results showed that the subjects' preferences can be expressed as Functions (1) and (2) respectively.

$$Y_{p1} = 7.510 - 0.449\ X_2 \qquad (r^2=0.237) \tag{1}$$

$$Y_{p2} = 3.932 - 0.627\ X_2 + 0.850\ X_7 \qquad (r^2=0.491) \tag{2}$$

In Functions (1) and (2), Yp1 and Yp2 mean the predicted scores of subjects' preferences toward classic chairs while X_2 represents the evaluation score for emotional image; X_7 represents the evaluation score for the delicate image.

In model 1, emotional image is the only image that has significant impact on user's preference toward classic chairs, with a standardized Beta of -.487, indicating a negative relationship between preference and emotional image. The higher the emotional image, the lower the degree of preference the subject may have. In model 2, two images enter the predicted formula, including emotional and delicate images. Between these two images, emotional image still has a negative effect (β= -.680) while delicate image has a positive effect (β= .539). It is clear that, to reach a higher degree of preference, consumers may expect a chair that is highly delicate but not too much emotional in product form.

The functions show that emotional and delicate images are the most important ones in influencing the subjects' preference. Consequently, preference and emotional and delicate images were used for further

analysis to transform consumer's preference and image perceptions into design specifications for product design similar to classic chairs.

4.3. Transform User's Preference and Image Perceptions into Design Specification

Baxter (1995) pinpoints that market pull is a key factor that will guarantee a product's success in the market. It is, therefore, very important that designers understand the consumer's needs and what do they think or perceive the products in an enterprise. In this study, morphological analysis and Quantification Type I analysis (a kind of multiple regression frequently used in Kansei engineering) were used for the transformation of consumer's opinions into design specifications for chair design related to classic chairs.

In the Q-type I analysis, the dependent variable is the evaluation score for the preference and delicate and emotional images of all subjects, and the independent ones are the indicated values of design factor level. The design factor level is obtained by morphological analysis, including seat, back, leg, stretcher, texture, and color of classic chair design. Every design factor is then divided into several patterns as can be seen in Table 2.

Table 2: The design factors and their patterns of classic chairs

Design factor		Design factor pattern			
A	Seat	a1 Free curve(line)	a2 Rectangular (rectangle, trapezium)	a3 Special shape	
B	Back	b1 Free curve(line)	b2 Geometric	b3 Rectangular (rectangle, trapezium)	b4 Special shape
C	Leg	c1 3 legs	c2 4 legs	c3 Connected by stretcher	c4 Cross shape
D	Stretcher	d1 Geometric	d2 No stretcher		
E	Texture	e1 Wood	e2 Metal	e3 Composite	e4 Plastic
F	Color	f1 1 color	f2 2 colors	f3 3 or more colors	

Table 3: The category weight (part worth) of form treatments in six design elements

Design element	Pattern	Preference	Emotional	Delicate
	a1	0.1369	0.1078	0.1654
	a2	-0.8937	-0.2551	-0.2824
Seat	a3	1.3243	0.2577	0.2048
	b1	0.2462	0.9969	0.7251
	b2	-0.5694	-2.5632	-1.0964
	b3	0.9247	0.0551	0.3356
Back	b4	-1.2676	0.5936	-0.5875
	c1	-0.2519	-1.4802	0.6286
	c2	0.0814	0.3788	0.1927
	c3	-0.5971	-0.9871	-1.1101
Leg	c4	0.5331	-0.0522	0.1947
	d1	-0.4019	1.2879	0.3735
Stretcher	d2	0.1148	-0.3680	-0.1067
	e1	-0.5700	0.8252	-0.4360
	e2	-0.2070	1.1694	0.4299
	e3	0.0415	-0.6472	-0.1352
Texture	e4	1.8748	1.1349	1.5058
	f1	0.6928	-1.0697	0.0858
	f2	0.4827	0.2084	0.1509
Color	f3	-1.1405	0.6483	-0.2475

From the distribution patterns of form treatment patterns of design elements, the same form treatment may have different effects or weights on the subject's preference and images. In terms of seat of classic chairs, three patterns of seat design have almost the same effects on emotional and delicate images but they have different influences on the subject's preference. The rectangular seat (a2) has a more remarkable negative effect on preference than on emotional and delicate images. On the contrary, the seat of special

shape would dramatically increase the degree of preference but only moderately increase the delicate and emotional images. For the chair back, the effects of free curve (b1) and rectangular back (b3) are close on preference and emotional and delicate images. However, there are big differences among preference and emotional and delicate images. Geometric back (b2) will have a more negative effect on preference but special back (b4) will have a more positive influence on preference compared with emotional and delicate images. For the chair leg form treatments, c2, c3, and c4 are almost the same in their effects on preference, emotional and delicate images. But there exist significant differences among preference, emotional, and delicate images in terms of the effects of 3 leg patterns. Its effect on delicate image is positive; moderately negative on preference but dramatically negative on emotional image (-1.48). Similar differences can be found on Geometric stretcher (d1), wood texture (e1), metal texture (e2), one colour (f1), and three or more colors (f3). For the enhancement of user's preferences and image perceptions, a subtle manipulation of form treatments of design elements is required.

It is clear that designers should have an in-depth understanding of the meaning behind the customer's preference and image perceptions. A specific form treatment may have different effects on different images or purposes of design such as preference or intention of purchase. It is the designer's creativity that will solve such kind of discrepancy of form treatments of product.

5. Conclusions

The analysis of the subject's preference and image perceptions of classic chairs reflects that middle-aged consumers preferred classic chairs featuring special shape seat, rectangular back, cross shape leg, no stretcher, plastic texture, and single colour. In addition, the highly preferred classic chairs are outstanding in the styles of modern, practical, simple, plain, and unique. On the other hand, the least preferred classic chairs are remarkably not practical, simple, and compact in terms of their styles. From the quantitative analysis of the effects of form treatment pattern, the same form feature may play different roles on different images or design purposes such as preference. Therefore, designers should pay attention to the manipulation of product form based upon the viewpoints of customers. It is the consumer's preference and perceived images of product forms that will help guarantee the success of a product. In the near future, the life style of consumers as well as different user groups' opinions regarding product form should be further investigated so as to develop a chair that fulfils the demands of specific group of consumers.

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