

A Study on Attractive Factor of Fun Chair

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Abstract: Along with the industrial progress and the improvement of life quality, the product functionality and usability have become the basic demands. The modern users lay more emphasis on pleasure, special use experience and memory empathy brought by the products. Studies related to the correlation between the human emotions and products have been developing vigorously, and plenty of goods of emotional design are appearing on the market. Due to the changing styles and the unpredictable creativity, the fun design arouses heated discussion among mass consumers. Therefore, this study starts from the perspective of Kansei engineering to study the human positive emotions and the consumer preference evaluation, and then get to explore the attractive factors of the fun chair. The findings are listed as below: (1) “Funny” is an important attractive factor for the fun chair, the design element can be enhanced under this factor when designing the fun chair. (2) Design strategies for fun chair: Primarily improving the Elegant & Fashionable quality to avoid rising consumer dissatisfaction; moreover enhance the Funny and Comfortable quality sequentially to improve the consumer satisfaction towards the fun chair.

Key words: *Fun chair, Kansei engineering, Miryoku engineering, EGM, Kano model, Attractive factor, Preference-Based Design*

1. Introduction

With the improvement of life quality, the consumer's needs towards the goods have been transformed from the satisfaction of the function and usability needs to the satisfaction of the psychological needs. In other words, what attracts the consumer in this era is no longer the Function of the merchandise, but the touching experience of Sensation and Empathy. According to the concept of Experience Economy, what the consumer values is the experience gained from the whole consumption process [18]. While the Emotional Marketing targets the consumer's inner affection and emotion, aiming to create emotional experience [7, 18]. It makes use of affection to attract consumption, and further explores the consumer's inner emotion, to create emotional experience, and offer enjoyment to the consumer. To conclude the background stated above, this study believes the furniture design tendency under the new lifestyle is of study value. With the attractive factors of the fun furniture as the main axis, this study will get into an exploration to this topic, with study purposes as below:

- (1) Explore the fun imagery attribute and the consumer's satisfaction of the fun chairs.
- (2) Extract the attractive factors of the fun chairs and propose corresponding design strategies.

2. Literature Review

2.1 Fun Furniture Design

What is “Fun”? According to the Cambridge Dictionary [2] and Oxford Dictionary [16], “fun” means: pleasure, enjoyment, entertainment or a thing that gives enjoyment or pleasure and makes you feel happy. To sum up, the fun is closely correlated with human positive emotions. Here this study sorts out the definitions of fun proposed by scholars as shown in Table 1. This study summarizes that fun is a kind of stimulus different from common thoughts, which is attractive and can bring people with positive emotions, such as pleasure, joy, happiness, amusement, enjoyment, amazement, humor, wit, drolly, etc. People get cognitive lag through the interaction between the sign and emotion, so as to feel surprised in mind, then produce a delicate sense of acceptance and finally fun.

Table 1. Definition of fun and related concepts

Content	Source
Humor is anything that is presented intentionally or unintentionally to make people feel joyful or funny.	Long & Graesser (1988) [12]
Funny thoughts are novel thoughts in terms of its content. In terms of the structure, it means the thought combination. From the perspective of appearance, it refers to optimistic thought.	Yang C. K. (1997) [24]
The fun literature requires tact. Put it simply, it should be novel, peculiar, and the idea should be superior to the common thoughts.	Tu C.Y. (2004) [23]
The sense of beauty, fun and taste combined can generate the enjoyment feeling, which is also a positive emotional status.	Norman (2005) [14]
Making fun is to present the funny aesthetic experience by the combination of signs and elements.	Sheng X. et al. (2008)[20]

In early times, studies related to human positive emotions were mostly in the fields of psychology and anthroponomy. However, since 1980s, studies in the fields related to Human Computer Interaction (HCI) started to study the fun of the interaction between humans and objects. Malone [21] analyzed pleasurable designs based on a vision of HCI and first introduced “Funology” in his study. Funology was defined as “The Science of Fun”, bringing the investigation of pleasure design in technology into the academic field with the objective to bring fun and pleasure to people. The expert of ergonomics and design, Jordon [8], mentioned that at the beginning, goods could exist for its function, then following was its usability and the final one was pleasure. Norman [14] also discussed the Funology and pleasure products in his work. He thought that the science should bring more things to our lives, not just the efficiency of work but also pleasure to enrich lives.

Watch the market trend and product bloom in the past ten years, you can find there were many products with creative idea, related to user’s experience, interesting, humor goods, even some designers or design companies devoted to pleasurable design too. Currently there is already plenty of fun furniture in the market. The furniture brands, such as Moooi, Straight Line Design, and the designers, such as Maximo Riera from Spain, Eero Aarnio from Finland, all have fun furniture works that arouse heated discussions. Compared with the chair furniture of other styles, the products with Kansei design can arouse the potential sensuous pleasure among consumers and satisfy the desire to the dreams, so as to cause empathy of the user [5]. Moreover, the chair with fun design can also awaken the inner desire of the consumer, so as to bring out the enthusiasm of the consumer.



Figure 1. Straight Line Design's work



Figure 2. Designer Maximo Riera's work

2.2 Evaluation Grid Method

In 1985, Japanese scholars Sanui Junichiro and Inui Masao [16] proposed “Miryoku Engineering” (also known as Preference-based Design) and its basic theory structure by improving the Repertory Grid Method (RGM) proposed by the Clinic Psychologist Kelly. In 1991, Ujigawa Masato gathered several scholars to conduct studies of Miryoku Engineering. Miryoku Engineering is a technique system or a Preference-based Design to create attractive objects, which focuses on building “Attractiveness Sensing Mechanism” and “Quantitative Attractiveness Evaluation Method” [22].

Moreover, the “Evaluation Grid Method” (EGM) was proposed by Sanui and Inui by improving RGM of Kelly [11], which is an important study method in Miryoku Engineering. It provides stimulus based on the theme scope. At first, it presents the subjects in pairs in front of the respondents, to compare the preference degree. The respondents are required to answer if they like or dislike it. And then it uses the additional questions to guide the respondents to clarify the answer or condition. Based on Original evaluation items obtained from the respondents’ instinctive understanding, it further asks about the Ladder-Up Abstract reasons and Ladder-Down Concrete conditions of the evaluation items. Repeat these steps to build the hierarchical grid structure of EGM (Figure 3), and further sort out the individual evaluation grid of the respondents towards the specific object.

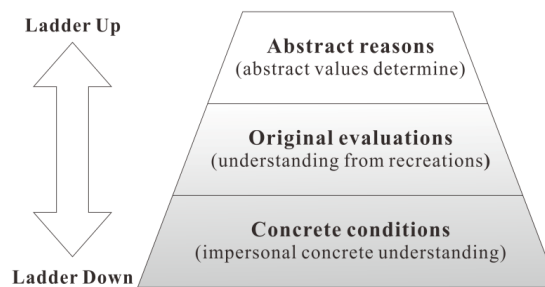


Figure 3. Ladder construction concept of EGM

2.3 Kano Model

In order to improve the concept about the quality that people emphasized the “physical quality” but ignored the “psychological quality”, Kano [9] proposed the “two-dimensional quality model” as shown in Figure 4, he divided into the following five categories of quality attributes: (1) Attractive quality: These attributes will provide customer satisfaction if it is sufficient; and if not, dissatisfaction will increase. (2) One-dimensional quality: These

attributes will result in the customer satisfaction when it is sufficient and dissatisfaction when it is not sufficient. (3) Must-be quality: These attributes will not rise the customer satisfaction when it is sufficient because the customer thinks it is naturally, but it will make customers feel unsatisfied if when being insufficient. (4) Indifferent quality: These attributes will not result in any customer satisfaction or dissatisfaction whether sufficient or not. (5) Reverse quality: These attributes will result in customer dissatisfaction when it is sufficient, but make the customer satisfied if being insufficient.

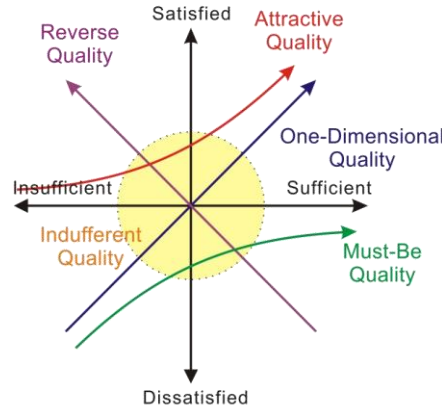


Figure 4. Kano Two-dimensional Quality Model [10]

By judging the quality attributes, it can explore the relationships between quality preference and customer satisfaction, and can identify the point attribute which can raise the customer satisfaction substantially. To judge the attributes of quality, the most commonly used and clearly method is Kano questionnaire survey. The Kano survey employs a questionnaire format with paired questions; it includes one functional and one dysfunctional form of the same question. Both forms of the question include five different response options for the customer to choose from. And by using the Kano's matrix, you can cross-check an individual's response to a functional question and to a dysfunctional question into one of five types of product features [13]. Following, Table 2 is the Kano Quality Attribute Matrix:

Table 2. Kano Quality Attribute Matrix [13]

Product Requirement. → ↓		Insufficient				
		I like it ~	It must be~	I am neutral	I can live~	I dislike it
Sufficient	I like it that way.	Q	A	A	A	O
	It must be that way.	R	I	I	I	M
	I am neutral.	R	I	I	I	M
	I can live with it that way.	R	I	I	I	M
	I dislike it that way.	R	R	R	R	E

In addition, through the high and low of "Customer Satisfaction Coefficient", can understand the influence to "customer satisfaction" and "customer dissatisfaction" if the quality sufficient or not [4].

$$\text{Extent of Satisfaction: } (A + O) / (A + O + M + I). \quad (1)$$

$$\text{Extent of Dissatisfaction: } - (M + O) / (A + O + M + I). \quad (2)$$

A= Attractive; O= One-dimensional; M= Must-be; I= Indifferent

Once the data is tabulated, the absolute importance values of customer requirements can be calculated by means of two terms: impact on "customer satisfaction" and impact on "customer dissatisfaction" [17].

3. Methodology

3.1 Methods and Steps

The experiment of this study adopts the qualitative and quantitative study methods in different stages. Firstly, this study collects samples of fun chair from collections of world-class museums. Secondly, conduct EGM interview to investigate the respondents' preference degree and the reason for the preference, and sort out the adjectives of the attractive factors. Then conduct the Kano questionnaire survey of the fun chairs, and conduct factor analysis and regression analysis, as well as summarize the correlation between the attractive factors and the consumer's satisfaction. Finally propose the design strategy for the fun chair.

3.2 Sample Screening

This study takes the classic chairs collected in the International Museums as study samples, so it collected MoMA Collection, 100 Masterpieces of Vitra Design Museum and the works after 1950s in the A Hundred Years-A Hundred Chairs Exhibition. At the meantime, it use keywords as “fun chair” and “humor chair” on the three major global searching engines Google, Yahoo and Live Search [19] , and add the top ten chair pictures of the search results into the samples. This study finally obtained 125 initial study samples.

3.3 Participants

Based on the findings of some studies and investigations, this study finds out that the consumers who often visit the furniture market are mainly 20~39 years old [3, 6]. According to the age distribution of the consumers visiting the furniture market (as Figure 5), this study conducts questionnaire survey on the groups who are 26~55 years old, have good financial capability, and intend to purchase furniture.

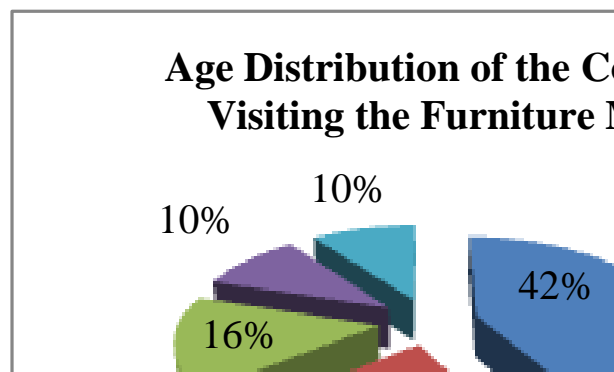


Figure 5. Age distribution of the consumers visiting the furniture market [3, 6]

4. Result

4.1 Extraction of Attractive Factors of Fun Chair (EGM)

To obtain the attractive factors, this study sorts out the evaluation grid based of EGM of 9 respondents. After simplification, it obtains 55 items of Concrete conditions, 24 items of Original evaluations and 37 items of Abstract reasons. Then this study sorts out the “Abstract Reasons”, and appoints the focus team with design background to make discussion and work out the adjectives on describing abstract feelings. Adjectives in the Abstract Reasons which obtain fewer than 3(included) points are deleted, and the corresponding opposite adjectives is worked out as well. Finally, it obtains 18 pairs of abstract adjectives, as shown in table below.

Table 3. Quality classification of bi-directional questionnaire

No.	Adjective	No.	Adjective	No.	Adjective
1	Relaxed—Rigid	7	Friendly—Distant	13	Funny—Boring
2	Conformable—Unconformable	8	Dynamic—Static	14	Convenient—Inconvenient
3	Lively—Stiff	9	Fashionable—Unfashionable	15	Imaginative—Unimaginative
4	Lovely—Unlovely	10	Elegant—Vulgar	16	Humorous—Serious
5	Warm—Cold	11	Unpredictable—Predictable	17	Novel—Traditional
6	Soft—Hard	12	Attractive—Unattractive	18	Brilliant—Ordinary

Based on the adjective pairs shown above, this study designs the quality evaluation questionnaire of the fun chair. As for the sample chairs, the focus team selects 10 most representative samples and the content of the questionnaire is mainly divided into 3 parts. Part 1 is about the basic information of the respondents; Part 2 is about the Kano questionnaire; while Part 3 is the questionnaire based on Semantic Differential method. The 18 pairs of adjectives are placed on both sides, and added with two items, namely fun degree and preference degree, to measure the consumers' feeling of different abstract reasons to the fun chair.

4.2 Kano Survey

In the questionnaire survey, there are 40 respondents from each group of 26~35, 36~45 and 46~55 years old, in which 45% are male and 55% are female. As for the occupation, Artistic Design accounts for the largest proportion (16.7%), followed by Information Technology (14.2%), Education (13.3%), and lastly the Construction Engineering, Medical Care and Health, Science and others occupations which account for 6~7%.

This study understood opinions of customers by the paired questions, and then determine by using the Kano matrix. Meanwhile, this study utilize “customer satisfactory coefficient” to get the “Extent of Satisfaction”(CS) and “Extent of dissatisfaction” (DS), these two coefficients can explain the credibility of classification of the attribute. The result of questionnaire is shown as the following table.

Table 4. Kano quality classification

Item	A	O	M	I	R	Q	CS	DS	Quality	Adjudged Quality
Relaxed	22.5%	31.7%	20.8%	23.3%	1.7%	0.0%	0.55	-0.53	O	O
Conformable	22.5%	39.2%	22.5%	15.0%	0.0%	0.8%	0.62	-0.62	O	O
Lively	28.3%	2.5%	2.5%	50.8%	4.2%	11.7%	0.37	-0.06	I	I
Lovely	23.3%	10.0%	7.5%	58.3%	0.8%	0.8%	0.34	-0.18	I	I
Warm	20.0%	21.7%	15.8%	38.3%	0.8%	3.3%	0.43	-0.39	I	O
Soft	28.3%	28.3%	9.2%	30.8%	0.8%	2.5%	0.59	-0.39	I	A
Friendly	25.8%	22.5%	10.8%	36.7%	1.7%	2.5%	0.50	-0.35	I	A
Dynamic	15.8%	1.7%	0.0%	62.5%	8.3%	11.7%	0.22	-0.02	O	I
Fashionable	39.2%	13.3%	6.7%	39.2%	0.0%	1.7%	0.53	-0.20	A/I	A
Elegant	13.3%	30.0%	31.7%	25.0%	0.0%	0.0%	0.43	-0.62	M	M
Unpredictable	27.5%	8.3%	5.8%	51.7%	1.7%	5.0%	0.38	-0.15	I	I
Attractive	19.2%	35.8%	22.5%	18.3%	1.7%	2.5%	0.57	-0.61	O	O
Funny	30.8%	20.8%	13.3%	31.7%	0.0%	3.3%	0.53	-0.35	I	A
Convenient	23.3%	26.7%	17.5%	28.3%	2.5%	1.7%	0.52	-0.46	O	O
Imaginative	30.8%	16.7%	9.2%	42.5%	0.0%	0.8%	0.48	-0.26	I	A
Humorous	24.2%	6.7%	7.5%	55.8%	2.5%	3.3%	0.33	-0.15	I	I
Novel	33.3%	10.0%	10.0%	45.0%	0.8%	0.8%	0.44	-0.20	I	A
Brilliant	19.2%	29.2%	28.3%	20.8%	0.0%	2.5%	0.50	-0.59	O	O

To avoid scattered consumer's evaluation results (which may lead to too many “Indifferent” factors), this study further explores the proportion of the quality classification by using the method proposed by Berger et al. [1], in which the proportions of (A+O+M) and (I+R+Q) are calculated, and the highest proportion of the larger value will

be taken as the quality attribute. After the attribute correction, the classification of quality attributes for the fun chair is interpreted as below:

- (1) Attractive quality: It includes 6 items of Soft, Friendly, Fashionable, Funny, Imaginative and Novel. These attributes will provide customer satisfaction if it is sufficient; and if not, dissatisfaction will increase.
- (2) One-dimensional quality: It includes 6 items of Relaxed, Comfortable, Warm, Attractive, Convenient and Brilliant. These attributes will result in the customer satisfaction when it is sufficient and dissatisfaction when it is not sufficient.
- (3) Must-be quality: Only Elegant included in this quality. This attribute will not rise the customer satisfaction when it is sufficient because the customer thinks it is naturally, but it will make customers feel unsatisfied if when being insufficient.
- (4) Indifferent quality: It includes 5 items of Lively, Lovely, Dynamic, Unpredictable and Humorous. These attributes will not result in any customer satisfaction or dissatisfaction whether sufficient or not.

4.3 Factor Analysis

This study applies statistic software SPSS to analyze the questionnaire data, inputting a total number of 1200 samples (120 respondents*10 chair samples). After the system eliminates the invalid questionnaires, it obtains 1184 valid ones, accounting for 98.7%. Base on the principal component analysis, it extracts four factors with the Eigen value larger than 1, and rotates the Varimax by orthogonal rotation to obtain the factor composition summary as shown in Table 6.

Table 5 Rotated component matrix

Item	Comfortable	Funny	Elegant & Fashionable	Lively & Lovely
Conformable	.893	.055	.135	.115
Soft	.847	.095	.040	.239
Relaxed	.846	.044	.170	.124
Warm	.833	.140	.041	.266
Friendly	.814	.095	.246	.212
Convenient	.642	.220	.374	-.242
Attractive	.481	.457	.457	.081
Humorous	.179	.799	-.219	.130
Novel	.044	.790	.358	.122
Unpredictable	-.070	.749	.284	.113
Funny	.203	.713	.239	.279
Imaginative	.115	.666	.365	.186
Brilliant	.295	.578	.532	-.051
Elegant	.324	.184	.731	.107
Fashionable	.120	.301	.729	.327
Dynamic	.123	.253	.562	.506
Lively	.378	.297	.233	.692
Lovely	.431	.292	.165	.664
% of Variance	27.069	20.964	14.738	9.555
Cumulative %	27.069	48.033	62.772	72.327
Reliability (α value)	.918	.876	.782	.832
Adjusted reliability	.922	.876	.782	.832

Next, it further explains each factor based on the content meaning of the items under each factor. Factor 1 includes Comfortable, Soft, Relaxed, Warm, Friendly and Convenient, which is correlated to the basic function and the comfortableness of the fun chair, so it is named as “Comfortable”. Factor 2 includes Humorous, Novel, Unpredictable, Funny, Imaginative and Brilliant, which is named as “Funny”. Factor 3 includes the items of “Elegant”, “Fashionable” and “Dynamic”, which is named as “Elegant and Fashionable”. Factor 4 includes

“Lively” and “Lovely”, which is named as “Lively and Lovely”. Besides, the factor loadings of the “Attractive” item are smaller than 0.5, so that this study is decided to be insignificant, and deleted the item. After adjustment, the α of each factor is changed into 0.922, 0.876, 0.782 and 0.832.

4.4 Regression Analysis

The regression analysis adopts the linear model, and the independent variables of the equations are the evaluations for the 18 attribute items, which are used to judge the positive and negative quality. The dependent variables are analyzed by the “Fun Degree (a)” and “Preference Degree (b)”. Based on the calculation results of the statistic software, it inputs 1200 samples in total for the regression analysis (120 respondents* 10 chair samples), including 1185 valid ones.

Observing the table of variance coefficient of fun degree (Table 7), it can be found that the significances all reach 0.000, which indicates all variables are significant. All four variables have significant influence on the Fun degree (a). The standardized coefficient of the 4 variables is respectively 0.214, 0.674, 0.193, and 0.270, among which the factor “Funny” obtains the largest coefficient, showing the greatest influence on the fun degree more significantly than the other three variables do. It is followed by “Lively and Lovely”, and “Comfortable”, which show similar influence. The “Elegant and Fashionable” shows the least influence, with the standardized coefficient as small as 0.193.

Table 6 Analysis of regression coefficient of fun degree

Coefficients a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
a	(Constant)	3.350	.020		165.407	.000
	Comfortable	.238	.020	.214	11.753	.000
	Funny	.751	.020	.674	37.087	.000
	Elegant & Fashionable	.215	.020	.193	10.633	.000
	Lively & Lovly	.301	.020	.270	14.878	.000

In the part of preference degree, as the Table 8, it can be found that the significances all reach 0.000, which indicates all variables are significant. All four variables have significant influence on the preference degree (b). The standardized coefficients of the 4 variables are respectively 0.566, 0.370, 0.439 and 0.094, among which the factor “Comfortable” obtains the largest coefficient, showing the greatest influence on the preference degree more significantly than the other 3 variables do. It is followed by “Elegant & Fashion”, the third one is “Funny”, and “Lively & Lovely” shows the least influence, with the standardized coefficient as small as 0.094.

Table 7 Analysis of regression coefficient of preference degree

Coefficients b						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
b	(Constant)	2.937	.020		143.325	.000
	Comfortable	.686	.021	.566	33.384	.000
	Funny	.446	.020	.370	21.788	.000
	Elegant & Fashionable	.530	.020	.439	25.885	.000
	Lively & Lovly	.113	.020	.094	5.530	.000

4.5 Comparison and Verification of the Weight of Factors

This study works out the composition factors of the fun chair by factor analysis and regression analysis, and calculates the factor weight of fun degree and preference degree. In this stage, it proposes the results of fun chair quality evaluation questionnaire for comparison and verification. According to the statistics of the questionnaire results for fun degree, this study extracts sample 2, 3, 4, 9, which obtains different level valuation in terms of both the fun degree and preference.

This study put forward the valuation on factors, the valuation on the fun degree and preference degree, and standardized coefficients (beta) of the fun degree and preference degree, to compare and verify the weight of influence by factors.

Table 8 Comparison of evaluation for the factors and the fun degree

Subject	Sample 9	Sample 4	Sample 2	Sample 3	Standardized Coefficients
Factor 1	3.16	1.76	3.68	2.28	0.214
Factor 2	3.69	3.68	3.24	3.00	0.674
Factor 3	3.66	2.55	3.34	3.18	0.193
Factor 4	2.95	2.95	3.68	2.62	0.270
Fun Degree	3.66	3.63	3.35	2.95	*

As shown in Table 8, the samples arranged from left to right in accordance with the valuation on fun degree, and the standardized coefficient is representative of the influence of factors on fun degree. First of all, observing the standardized coefficient, it can be found that excluding Factor 2 (the standardized coefficient is 0.674), the standardized coefficient of others are low, it represents that the influence of Factor 2 is more significant than other three. Then this study compared the valuation on fun degree and found that the ranking of valuation on Factor 2 is similar with which on fun degree. Among the four samples, the sample 9 and 4 obtain similar valuation on Factor 2, although the valuation of sample 9 was significantly higher than sample 4 in terms of other three factors, it didn't impact the valuation of fun degree too much. This result shows that only the Factor 2 can exercise observable influence over the fun degree, the influence of other factors is small. This is consistent with the results of the standardized coefficients analysis.

Table 9 Comparison of evaluation for the factors and the preference degree

Subject	Sample 9	Sample 4	Sample 2	Sample 3	Standardized Coefficients
Factor 1	3.16	3.68	1.76	2.28	0.566
Factor 2	3.69	3.24	3.68	3.00	0.370
Factor 3	3.66	3.34	2.55	3.18	0.439
Factor 4	2.95	3.68	2.95	2.62	0.094
Preference Degree	3.53	3.35	2.31	2.64	*

As shown in Table 9, it can be divided into 2 groups in accordance with the valuation on preference degree: the High-score group (sample 9, 2) and the Low-score group (sample 4, 3). Comparing the valuation of 2 groups, it can be found that the valuation of High-score group is significantly higher than the Low-score group, the result presents that Factors 1, 2 and 3 are significantly correlated with preference degree. In addition, comparing the valuation on Factor 4, sample 2 is substantially higher than sample 9, however the its preference degree is lower than sample 9, it shows that the Factor 4 is lowly correlated with preference degree, and the result consistent with the quite low value of standardized coefficient of Factor 4.

Discussing the influence of weight of fun degree and preference degree, it can be found that the evaluation result of fun degree and preference degree is not consistent, samples with high fun degree are not necessarily have

high valuation on preference. The preference will influence by “Comfortable”, “Funny” and “Elegant & Fashionable” simultaneously, “Comfortable” shows the greatest influence, and the correlation with factor “Lively and Lovely” is weak.

4.6 Summary

After Kano and SD questionnaire survey, this study judges the attributes of the quality items by using the Kano quality matrix, and classifies 18 quality attributes by using factor analysis, and obtains four factors eventually. Table 10 makes comparison between the Kano attributes of the quality items and the four factors, to analyze the correlation between the factor priority and the quality attributes.

Table 10 Analysis of factor quality

Factor	Item	Kano Quality	Factor Quality
Comfortable	Conformable	O	One-dimension
	Soft	A	
	Relaxed	O	
	Warm	O	
	Friendly	A	
	Convenient	O	
Funny	Humorous	I	Attractive
	Novel	A	
	Unpredictable	I	
	Funny	A	
	Imaginative	A	
Elegant & Fashionable	Elegant	M	Must-be
	Fashionable	A	
	Brilliant	O	
	Dynamic	I	
Lively & Lovely	Lively	I	Indifferent
	Lovely	I	

As shown in Table 10, in the 6 quality items under the factor “Comfortable”, Comfortable, Relaxed, Soft, and Convenient belong to Kano one-dimensional quality, while Soft and Friendly belong to attractive quality. So it can be concluded that the factor “Comfortable” is more like the One-dimensional quality. And in the 5 quality items under the Factor “Funny”, Novel, Funny and Imaginative belong to Attractive quality, while Humorous and Unpredictable belong to Indifference quality. So it can be inferred that the Factor “Funny” is more like the Attractive quality. Factor “Elegant & Fashionable” includes 4 items, in which the quality attribute of 4 items is respectively M, A, O and I; the attribute of “Elegant & Fashionable” is not observable. Further observing the factor loading of the 4 items, the factor loading is respectively 0.731, 0.729, 0.532 and 0.562, it presents that “Brilliant” and “Dynamic” show weak influence on this factor, thus, this study only consider the quality attributes by the "Elegant" and "Fashionable", and classify the Factor “Elegant & Fashionable” as Must-be quality. Since the 2 quality items, Lively and Lovely both belong to Indifference qualities, the factor “Lively & Lovely” can be classified as Indifference quality.

By discussing the effectiveness of consumer satisfaction by different quality preference, the appropriate prioritization of quality can provide. To avoid rising consumer dissatisfaction, the “Must-be quality” should be to improve primarily; second, we should sequentially improve "Attractive quality" and "One-dimensional quality" to enhance consumer satisfaction (because the Attractive quality shows greater effectiveness on consumer satisfaction enhancing than One-dimensional quality); attention should be paid less in the “Indifference quality” to avoid resources wasting.

As the analysis and comparison above, it could regard the “Comfortable” as One-dimensional quality, “Funny” as Attractive quality, “Elegant & Fashionable” as must-be quality and “Lively & Lovely” as Indifference quality. This study push back the coefficient of each factor and propose that “the design strategy to improve the satisfaction towards the fun chair”: *It should improve the “Elegant & Fashionable” quality primarily to avoid rising consumer dissatisfaction, moreover enhance the “Funny quality” and “Comfortable quality” sequentially to improve the consumer’s satisfaction towards the fun chair. Attention should be paid less in the factor “Lively & Lovely” due to it shows weak influence on consumer’s satisfaction/preference.*

5. Conclusions

This study starts from the perspective of Kansei engineering to study the attractive factors of the fun chairs, the conclusions of this study are summarized as the following points:

- (1) According to the result of regression analysis of fun degree, the Factor “Funny” obtained much higher value of the standardized coefficient, it represents that Factor “Funny” is an important attractive factor for the fun chair; it can exercise significantly greater influence over the fun degree than other factors. Therefore, “Funny” is the attractive factor of the fun chair. In designing the fun chair, this factor could enhance the design element, which is a key strategy to improve the user’s satisfaction.
- (2) As the results discussion in Chapter 4, it could regard the “Comfortable” as One-dimensional quality, “Funny” as Attractive quality, “Elegant & Fashionable” as must-be quality and “Lively & Lovely” as Indifference quality. Pushing back the coefficient of each factor, it proposes that “the design strategy to improve the satisfaction towards the fun chair”: *Primarily improving the “Elegant & Fashionable” quality to avoid rising consumer dissatisfaction, moreover enhance the “Funny” and “Comfortable” quality sequentially to improve the consumer’s satisfaction. Attention should be paid less in the factor “Lively & Lovely” due to it shows weak influence on consumer’s satisfaction/preference.*

6. References

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