The Relationship between *Kansei* Scale for Uniqueness of Products and Purchase Motivation

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Abstract. The purpose of this study was to compose *Kansei* Scale on Uniqueness Products (KSUP) which evaluates the uniqueness of products, and to clarify relations between uniqueness of products and the consumer's purchase motivation. The evaluated products were humidifiers. We examined *Kansei* elements consisted uniqueness of humidifier, and relationships between *Kansei* elements of uniqueness and purchase motivation. As the result of present study, it was indicated suggested that the KSUP on humidifier consisted of “*Feeling of nondaily life*” and “*Reminiscent*”. In addition, “*Feeling of nondaily life*” showed a tendency to have a high positive correlation with purchase motivation than “*Reminiscent*”. It is expected that the KSUP will become one of the most effective indexes used in product development and that it will help designers develop more attractive products that are in line with consumer needs.

Keywords: *Kansei*, Uniqueness, Purchase motivation, Product design.

1 Background

Kano (1984) proposed the concepts of the “must-be quality” and “attractive quality.” In order to increase the attractive quality of a product, it is necessary to include a *Kansei* value in the product. It is possible to offer a better product to consumer by incorporating elements that consumer feel are attractive and by producing products that are reviewed highly by them.

The appearance of a product is one of the factors that determine its attractiveness; attractiveness has a significant impact on consumers. If the appearance of a product is characteristic or unique, it is easy to catch the attention of the consumer, and thus, he/she becomes interested in the product. The AIDMA (Attention, Interest, Desire, Memory, and Action) model shows the process involved in human consumption behavior. The appearance of products has an influence on “Attention” and “Interest” as per the AIDMA model. Therefore, it is desirable that the appearance is unique.

The *Kansei* elements that are related to the uniqueness of products and the scale on the uniqueness of products aid in the design of an attractive product.

Besemer & O'Quin (1986) investigated product creativity and developed the Creative Product Semantic Scale (CPSS), based on the Creative Product Analysis

Matrix (CPAM theory) (Besemer & Treffinger, 1981). The validity of CPSS was verified by studying various products, such as T-shirts (Besemer & O'Quin, 1986), chairs (Besemer & O'Quin, 1999), and livingware (Besemer & O'Quin, 1989). Besemer (2000) stated that CPSS is available to predict the purchase of the product.

Ohta & Kasamatsu (2012) proposed scale for measuring the uniqueness of products, called the "Kansei Scale for Uniqueness of Products" (KSUP). Ohta & Kasamatsu extracted Kansei elements related to the uniqueness of products and derived five factors. They are as follows: "Feeling of non-daily life", "Captivated", "Cutting-edge", "Legerity", and "Interesting & Suggestive". Particularly, it was assumed that uniqueness of home electronics was influenced by "Feeling of non-daily life" and "Captivated".

Attention and interest as per the AIDMA model were influenced by the uniqueness of the products. Additionally, uniqueness affects "action." Therefore, using the KSUP in the product development leads to an increase in the attractiveness of the product and facilitates the consumer's purchase motivation.

2 Purpose

The purpose of this study was to compose *Kansei* Scale on Uniqueness Products (KSUP) for the humidifier which evaluates the uniqueness of products, and to clarify relations between uniqueness of products and the consumer's purchase motivation. We examined *Kansei* elements consisted uniqueness of humidifier, and relationships between *Kansei* elements of uniqueness and the reason of purchase motivation.

3 Experimental Method

The evaluated products were five types of humidifiers (H1~H5). These products were released in the past ten years, and the choice was made in such a way that there was no bias in shape, color, and year of release. The features of the five humidifiers were

Fig. 1. Sample of PC view

unified on vaporizer type, and its size was up to 16.5 square meters. The images of products were presented on a 24-inch display screen (Fig.1).

Fifty-one participants (Average: 23.5 ages, SD: 1.69 ages) rated the evaluation items for each image on the 7-point scale using Semantic Difference (SD) Method. There were 31 evaluation items broken down as: 14 items extracted by brainstorming about “uniqueness,” 13 items selected according to the CPSS of the “Novelty” dimension, 12 items regarding purchase motivation, and 1 item with the comprehensive evaluation of “Unique.” Table 1 shows 31 evaluation items.

Table 1. 31 evaluation items

Evaluation Items			
Want to show	—	Want to conceal	Fresh — Overused
Fine	—	Coarse	Novel — Predictable
Reminiscent	—	Non-Reminiscent	Unusual — Usual
Individual	—	Public	Original — Commonplace
Good	—	Bad	Startling — Stale
Delicate	—	Rugged	Astonishing — Commonplace
Interesting	—	Boring	Astounding — Common
Attractive	—	Unattractive	Unexpected — Expected
Well-crafted	—	Crude	Trendsetting — Warmed over
Eccentric	—	Conventional	Revolutionary — Average
New	—	Old	Radical — Old hat
Distinctive	—	Ordinary	Want to buy — Not want to buy
Surprising	—	Customary	Want to use — Not want to use
Shocking	—	Ordinary	Easy to use — Hard to use
Exciting	—	Dull	UNIQUE — Non-UNIQUE
Zippy	—	Bland	

The participants were made to give presence or absence of humidifier, the reasons for their evaluations of “uniqueness”, determine whether the product was known, and 13 purchase motivation items of the reason for “Want to buy”. Participants rated the evaluation items for each items on the 7-point scale (from -3 to 3). Table 2 shows 13 reasons of purchase motivation items.

Table 2. 13 reasons of purchase motivation items

Evaluation Items	
High performance	Get sympathy with others and interest from others
Good design	Keep not get bored
Not drawn much attention	Good texture and material
Look high-class	Have an impact
New feature included	Can express the way I am
Other people not have much	Can express myself in the future
Match my room interior	

4 Results

4.1 Factor Analysis

Factor analysis by maximum likelihood method (promax method) was used to identify a sensitivity factor about “UNIQUE” of humidifier. Object variable were selected 26 items that were excepted “UNIQUE”, “Attractive”, “Want to buy”, “Easy to use”, “Want to use” from the inside of 31 items. As the result, 3 factors were obtained, cumulative contribution ratio was about 74.8 %. Table 3 shows factor loadings.

Factor 1 included 15 items of “Unique”, “Novel”, “Astonishing” and so on. Factor 2 included 10 items of “Radical”, “Want to show”, “Good” and so on. Factor 3 included 1 item of “Reminiscent”. From the above, 3 Factor were given meaning names, Factor 1: “*Feeling of non-daily life*”, Factor 2: “*Smartness & Cutting-edge*”, Factor 3: “*Reminiscent*”.

Table 3. Result of factor analysis

		Factor loading		
<i>Feeling of nondaily life</i>	Unique	.913	.706	.696
	Novel	.911	.639	.587
	Astonishing	.904	.609	.589
	Individual	.885	.663	.752
	Surprising	.880	.549	.409
	Unusual	.876	.626	.679
	Original	.875	.692	.678
	Shocking	.874	.613	.577
	Unexpected	.864	.495	.510
	Interesting	.861	.725	.447
	Eccentric	.851	.650	.743
	Astounding	.837	.641	.549
	Revolutionary	.834	.692	.730
	Startling	.817	.501	.488
	Exciting	.812	.778	.493
<i>Smartness & Cutting-edge</i>	Radical	.789	.841	.400
	Want to show	.727	.824	.342
	Good	.561	.815	.240
	Well-crafted	.584	.805	.331
	Trendsetting	.786	.803	.634
	New	.784	.801	.368
	Fresh	.788	.793	.383
	Fine	.434	.748	.290
	Delicate	.366	.704	.248
	Zippy	.103	.174	.087
<i>Reminiscent</i>	Reminiscent	.147	.060	.264
Cumulative contribution ratio (%)		62.004	70.499	74.818

4.2 Multiple Regression Analysis

Multiple regression analysis to identify a sensitivity factor about “UNIQUE” of humidifier by 3 factors what were obtained using factor analysis. The multi collinearity by VIF was not confirmed. Multiple regression analysis using the step wise method was conducted. The dependent variable was ”UNIQUE”, and independent variable was 3 factor “*Feeling of nondaily life*”, “*Smartness & Cutting-edge*”, “*Reminiscent*”. As a result, it was provided below a multiple regression equation (1).

$$\text{Uniqueness} = 0.333 + \text{“Feeling of nondaily life”} \times 1.289 + \text{“Reminiscent”} \times 0.524$$

$$(R^2 = 0.791) \quad (1)$$

KSUP-score for five products were calculated using equation (1). As the results, each score for five products were below;

H1:2.05, H2:0.45, H3:-0.27, H4:0.44, H5:-0.98.

4.3 *Kansei* Scale on Uniqueness for Five Humidifiers

Figure 2 shows distribution map on five products by factor score of factor analysis. The x axis was set to the factor score of “*Feeling of nondaily life*”, and the y axis was set to the factor score of “*Reminiscent*”. The factor score of both “*Feeling of nondaily life*” and “*Reminiscent*” on H1 were the highest of other products. The factor score of “*Feeling of nondaily life*” on H2 was similar to it on H4, although the factor score of “*Reminiscent*” on H2 was higher than it on H4. The factor score of “*Reminiscent*” on H3 was similar to it on H2, although the factor score of “*Feeling of nondaily life*” on H3 was lower than it on H2 and H4. The factor score of both “*Feeling of nondaily life*” and “*Reminiscent*” on H5 were the lowest of other products.

Fig. 2. Distribution map on five humidifiers by KSUP

4. 4 Relationships between Uniqueness and Consumer's Purchase Motivation

We examined the relationships between an item score of “Want to buy” and uniqueness by “*Feeling of nondaily life*” and “*Reminiscent*”. The x axis was set to the factor score of “*Feeling of nondaily life*” (Fig. 3(a)) and “*Reminiscent*” (Fig. 3(b)). The y axis was an item score of “Want to buy”. The products with high “*Feeling of nondaily life*” or “*Reminiscent*” was a trend towards higher ratings for “Want to buy”. However, this tendency is clearly “*Feeling of nondaily life*” than “*Reminiscent*”.

Then, the correlation coefficient among “UNIQUE”, “Attractive” and “Want to buy” was calculated on five products. There were significant high correlation coefficient between “Attractive” and “Want to buy” ($r=.753$), and between “UNIQUE” and “Attractive” ($r=.691$).

(a) “*Feeling of nondaily life*” and “Want to buy” (b) “*Reminiscent*” and “Want to buy”

Fig. 3. Uniqueness and “Want to buy”

Fig. 4. Average score of reason for purchase motivation on H1 and H5

Next, we examined the relationship between purchase motivation and reason for purchase motivation on high and low uniqueness score of humidifier. Figure 4 shows average score of reason for purchase motivation items on H1 and H5. H1 was focused on as high humidifier of uniqueness, and H5 was as low. H1 with high evaluation score of uniqueness was also high “Want to buy” score. “Good design”, “Have an impact”, “Good texture and material”, “Get sympathy with others and interest from others” were obtained high evaluation as reason of purchase motivation items. In contrast, H5 with low evaluation score of uniqueness was also low “Want to buy” score. “Look high-class”, “Can express myself in the future”, “Can express the way I am”, “Have an impact” were obtained low evaluation as reason for purchase motivation items.

5 Discussion

The *Kansei* elements which consisted uniqueness of humidifier were examined by factor analysis. As the result of analysis, it was considered that the KSUP on humidifier was consisted of “*Feeling of nondaily life*” and “*Reminiscent*”. This result was different from some results of Ohta and Kasamatsu’s (2012); uniqueness scale of home electronic products was constituted of “*Feeling of nondaily life*” and “*Smartness*”. The appearance reminiscent of something was strongly related to uniqueness than “*Smartness*” in the humidifier. Comparing the coefficients of multiple regression equation, the coefficient of “*Feeling of nondaily life*” was larger than it of “*Reminiscent*”. Therefore, it was indicated that uniqueness of humidifier was strongly influenced by “*Feeling of nondaily life*”.

“*Feeling of nondaily life*” and “*Reminiscent*” bore almost proportionate relationship to “Want to buy” from the results of relationships between uniqueness and purchase motivation. Especially, factor score of “*Feeling of nondaily life*” and “*Reminiscent*” of H1 was higher than other products. The evaluation of “Want to buy” was high also. When the appearance of product was seen, H1 had round shapes and shiny texture compared with other products. The shape of H1 was rare, and it was not seen to general humidifier and home electric appliance. H5 was noticeable that appearance seems to be a humidifier. In view of this, it was easy to feel uniqueness more and to lead with purchase motivation when a humidifier did not seem to be a humidifier and a general home electric appliance. It was considered that the attractive product and purchase motivation were related closely because there was strongly correlation between “Attractive” and “Want to buy”. There was correlated to “UNIQUE” and “Want to buy”, but the correlation coefficient between them was lower than it between “Attractive” and “Want to buy”. Moreover, the score of uniqueness on H3 was higher than it on H5, on the other hand, the score of “Want to buy” on H5 was higher than it on H3. Therefore, the relations of uniqueness and purchase motivation for humidifier were not strong as relations of attractiveness and purchase motivation. However, it was suggested that uniqueness of humidifier might influence to purchase motivation.

The reason for purchase motivation items was different depending on the level of uniqueness. The reasons for purchase motivation, i.e. goodness of design, strongly impression, goodness of texture and material, and getting sympathy and interest were affected in products with high uniqueness. This means that "Appearance design" consisted by shape, color and texture and "User's mind" that wants to sympathy from people around by possessing influenced to increase purchase motivation of humidifier.

6 The Proposal of a System Which Utilized KSUP

On the basis of above results, we proposed the system which used for R&D (Research and development) at manufacturers and EC (e-commerce) shop for consumer.

The designer gets feedback from consumer's *Kansei* and needs in R&D. Consequently, the designer can create the unique products which suit consumer's *Kansei* and the other needs. KSUP can be used for product research such as a monitor survey at in-house. It is possible to score the degree of uniqueness by KSUP. The designer will be able to understand how consumers feel the uniqueness of the product. The designer will need to modify the design of product when the uniqueness expressed by designer is different from it of consumer.

Therefore, it was considered that this system will serve the information as the support system for designer. Figure 5 shows usage model on proposal system for designer.

Fig. 5. Usage model on proposal system for designer

Moreover, KSUP can evaluate uniqueness of products that have been on sale. A consumers' evaluation can compare their rating of others by numerical value or visual diagram by this system. They can recognize their degree of sensitivity objectively and visibly. Displaying a degree of uniqueness and a distribution map leads purchase motivation to consumers before buying.

Therefore, it was considered that this system will serve the information to choice products by their *Kansei* as the support decision-making system for consumer. Figure 6 shows usage model on proposal system for consumer.

Fig. 6. Usage model on proposal system for consumer

7 Conclusion

The purpose of this study was to compose *Kansei* Scale on Uniqueness Products (KSUP) which evaluates the uniqueness of products, and to clarify relations between uniqueness of products and the consumer's purchase motivation. We examined on five kinds of humidifiers using evaluation experiment. As the result of this study, it was indicated that the KSUP on humidifier consisted of "*Feeling of nondaily life*" and "*Reminiscent*". In addition, "*Feeling of nondaily life*" showed a tendency to have a high positive correlation with purchase motivation than "*Reminiscent*". Moreover, it was considered that the uniqueness of humidifier was influenced by two reasons for purchase motivation which "Appearance design" consisted by shape, color, texture and strong impression and "User's mind" that want to empathize with others by possession after buying mainly.

It is expected that the KSUP will become one of the most effective indexes used in product development and that it will help designers develop more attractive products that are in line with consumer needs. In the future, if consumer as well as designer utilizes the KSUP and a system that could give feedback to designers can be suggested, it will help them design products that are closer to the consumer's affectiveness.

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