ORIGINAL ARTICLES
SPECIAL ISSUE

RELATIONSHIP BETWEEN CONSUMER-ORIENTED EMOTIONAL DESIGN AND CREATIVE ATTRIBUTES

Jong-Dae KWON* and Jung-Pyo HONG**

* Design Manufacture department of *Chonbuk National University, Jeonju 561-756, Republic of Korea*

** Industrial Design department of *Chonbuk National University, Jeonju 561-756, Republic of Korea*

Abstract: This study examined the relationship of what kind of creative thinking has related factors for emotion design products in order to let consumers focusing on the successful cases of emotion products. For the design creativity attribute used in this experiment, the design evaluation creativity tools revealed by Kim Eun-Ju's 2007 design creativity evaluation tool development were used mostly and of the 12 most common emotion products and single products, MP3s, which have various forms, functions and sizes were selected as the target for experiment. Results of the experiment showed that for design creativeness items of all emotional products, vision creation, favorableness, convenience, practicality and being purchasable were relevant, while for MP3 as single products, uniqueness, favorableness and convenience were relevant. Accordingly, the common features of design creativeness items for emotional products were identified. When summing up the contents of the two experiments above, for emotional designs, the interest level of uniqueness for the design creativity evaluation items and the functional items for practicality had a high level of relativity. Therefore, there is a need to examine the common features between the design creativity items for general products other than MP3s in the future.

Keywords: *Usability Design Creativity, Emotion Design, Design Methodology, Product Design*

1. PARADIGM SHIFT TO EMOTION

Recent issue in design is emotional design. In terms of that this research looking into the need, definition and cases would help to understand emotional design.

Today consumers act on their emotion and instinct rather than their seasonal consumption based on practicality. And they become attached emotionally as falling in love and purchase under the influence of images that a product symbolizes. After industrial revolution users have needed quantitative and qualitative satisfaction with product and product developers have been making products suitable for users' various need emotionally as well as functionally.

As seeing in the title of daily newspaper that an issue of entire IT market was emotion in 2006, almost products as well as notebook computers have strongly appealed to users highlighting emotional elements. Also a design trend appears to contend with peculiar shapes because of no difference of function between companies according to technological development. In market that competitive power is deepened with similar technology and function the territory of specialty should be blurred and frequently crossed for design innovation.

A photographer designs ceramics, a fashion designer plans the color and pattern of household appliances and applies new pattern to credit card. In addition to that, overseas star designers rush in Korea one after the other. Particularly in digital luxury goods it is clear that products appeal to emotion rather than reason.

After a product perfectly have equipped with funda-

mental elements such as technology, function, price, durability, usability, etc, emotional elements that the product would represent might bring out its appeal. If we would look around prominent products emotional design

Figure 1: B&W Speaker (up): The spiral shaped shell of speakers have low-pitched sound and perfectly rich tones. Speakers in inside of shape of seashell as it sounds that audience remind of place near by rippling shore.

Godiva Chocolate (down): Within a characteristic as elegant and noble image in GODIVA, make with art nouveau style to reveal emotions in some kinds of sweet experience of chocolate in detail.

could be the supreme strategic and competitive result.

2. THE NEED OF EMOTIONAL DESIGN

Our market environment demand new technology and creative idea to break through (over) a heavy 'brand barrier' of existing advanced companies and new companies of the third world such as China. Especially in digital age technological barrier is disappeared many global hit products in which is combined technology with creative idea should be discovered.

Usability, design, price, etc. have an effect on product purchase as important factors consumers' desire could be changed by capability of product development, users' senses and social economical condition. Also consumers' desire for product appears to the direction that satisfies private characteristics and tastes rather than efficiency and function. Many advanced consumers' desire has been changing from practicality to emotion, a substitute of that is emotional design.

3. DEFINITION OF EMOTIONAL DESIGN

Hartmut Esslinger said "Form follows emotion. Form is created with illusion or fantasy, feeling or sensibility and fun." [figure 2]

Also Donald Norman said "why does human like beautiful exciting thing and is he pleased with its appropriation? First of all what is the reason its usability is enhanced? So to speak, a product which one might feel good could satisfy usability as well. For example, after washing and brilliantly polishing his car he might feel driving goes well. Taking a bath and smartly dressing up you might feel better. Like this it is surprising that aesthetically taking delights is actually to make better operations." For example to understand emotional design, some company had taught a woman cooking and the use of a voice recognition microwave oven with human voice. In spite of the newest model the microwave oven had not been sold. The reason was that voice, 'do this, do that' had made her felt noisy. As our knowing in this example, goods to make one's cooking pleasure is to pursuit one's emotion, the product to chase these value is emotional design.

Figure 2: GT2 Speaker (left) & ALLESSI goods (right)

4. CASE STUDY

4.1 Conversion of Idea Generation by Technology

Representative products which one enjoying music hope to possess are Bang & Olufsen, one of them. Also there are representative examples to relief a company from hardship, RAZR, Motorola [figure 3] gives rise to slim trend of mobile phone in world market and IMAC, I Pot make Apple computer revival as the best company of digital appliance. They have something in common that they combine advanced technology with creative idea through the conversion of idea generation.

4.2 Combination of Technology and Emotion [Bang & Olufsen]

If we see the Bang & Olufsen we think it not as a sound facility but as an artistic work. It seems that it has unique design and insufficient functionality, but many audio manias admit the best sound quality as well as its design. Jacob Jensen, a designer of Bang & Olufsen said "design is a language which understood by everyone." Bang & Olufsen pursuits unique harmony of technology and design to make a product pleasing all human senses.

4.3 'Now Life is Art and Emotion'

In domestic market successful cases continuously

Figure 3: RAZR, I Pot and IMAC

Figure 4: B&O Audio

appear to products combined technology and creative ideas. For example that ‘now life is art and emotion’, painters, fashion designers, photographers have discarded existing concept and set out emotional elements. So their products strongly have appealed to consumers.

It is said that in the age of third circulation revolution keywords are on-line and emotion. This might mean the age comes consuming not the function of product but images.

In Star bucks, a coffee house several convenient facilities are supplied as a meeting place that ‘even if a thing have not been sold, to one’s heart’s content first enjoy and go.’ Star bucks is a representative case to accentuate brand image or experience and to success as an emotional shop.

LCD TV (left) : Theme of art work by Ha Sang-Lim make as interior pieces in design, concept of “To change the paradigm of home appliances through infusing new idea into people who couldn’t easily satisfied in raising the standard of living and elegant life style. Designer’s collection, HAENGNAM chinaware (right) : Development HAENGNAM China into luxurious brand based of globalism in the China collection with Art of famous photographer Kim Joong-Man.

4.4 Emotion Expression by Color and Sound

When we dressed ‘be the red’ shirts or saw red colors and heard ‘dae~han, min, kuk’ rhythm in 2002 World Cup we felt a sense of unity as one community. This shows that color or sound could influence on one’s perception as well as one’s senses.

5. EMOTIONAL DESIGN AND DESIGN CREATIVITY

Design in the 21st century no longer exists simply of aesthetic reason, but occurs within the motions of every-

Figure 5: art Dios refrigerator & Samsung PAVV

Figure 6: The red evils

day life through scientific analyses and trends. Fultron Suri (2004) stressed that ‘design experience’ acts as an important factor, which is the key for creating good designs 2). Emotion is applied in various fields such as marketing, product planning, advertising, design, etc for corporations.

In particular, with the mature and saturated market where it is difficult to develop new products, the engineer designer Jack H stated that in order to create emotional products that can satisfy consumer demands, he believes in ‘intuition’. In addition, the industrial designer Richard Stevens stated that ‘industrial designers who studied in art colleges enjoy making intuitive judgments’. Likewise, most designs based on subjective thinking must be judged from an objective perspective 3).

Therefore, in order to examine the relationship of emotional design and creativity in this study, successful emotional design cases will be the focus of the study. The creativity study of emotional designs aims at revealing the relationship of successful products and design creativity focusing on the scale 4) for categorizing the design evaluation creativity tool that is shown in the development of the 2007 Kim Eun-Ju’s design creativity evaluation tool.

Figure 7: Design Creativity Attributes

6. EXPERIMENT ANALYSIS

Experiment was performed through brainstorming among expert groups and consumers, focusing on 10 keywords (uniqueness, vision forming, entertaining, humor, convenient, durable, multi-functional, practical and familiar). Samples were performed among 12 products that are judged to be successful emotional design cases among products that are currently launched in the market.

Tests were based on the 10 items excluding the new and interesting aspects of uniqueness categorized in the design creativity evaluation, as well as the functions of the practical aspects and the openness for the potential to realize. In addition to this, 12 items including preference and purchase levels on a 7 point scale. The survey was performed through a total of 40 people who major in design at graduate school levels.

When presuming the causation between preference (independent variable) and design creativity items (dependent variable) through multiple regression analysis, it is as shown below. Design creativity items for emotional products were shown to have a relationship with vision-creation, favorableness, humor, convenience, practicality and purchase levels.

Furthermore, in the relationship of purchase levels (independent variable) and design creativity items (depen-

dent variables), results showed that there was a relationship between convenience and preference. After regression analysis of the above two (preference, purchase levels), there was a difference for design creativity items for emotional designs depending on the preference and purchase levels, but there was a deeper relationship with that of convenience.

The following was an examination of the relationship of emotional designs and design creativity focusing on a single product. Examination was performed on design creativity of a single product, in this case, MP3s, which have various forms, functions and sizes, which are one of the 12 most common emotional products. 43 samples from the top four companies in sales since 2002 were selected.

In order to find the best samples for the products, the

Table 2: Relationship of Design Creativity Items and Purchase Levels

Model	Coefficients ^a				t	Sig.
	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta			
(Constat)	-.373	.347			-1.077	.282
DISTINCTION	-.012	.041	-.011		-.304	.761
NON-TYPICAL	-.045	.033	-.043		-1.343	.180
OPENNESS	7.279E-02	.040	.066		1.801	.072
FUN	-.055	.047	.047		-1.190	.235
FAVORABLE	2.486E-02	.031	.021		.797	.426
HUMOROUS	1.799E-02	.043	.014		.420	.675
CONVENIENCE	9.967E-02	.032	.083		3.081	.002
DURABILITY	5.409E-02	.029	-.045		1.893	.059
VERSATILE	3.693E-02	.023	-.036		1.609	.108
REALITY	.039	.036	.030		-1.092	.276
FRIENDLY	.907	.033	.829		27.286	.000

a. Dependent Variable : Purchase

Figure 8: 12 successful emotional design cases used in the tests

Table 1: Relationship of Design Creativity Items and Preference

Model	Coefficients ^a				t	Sig.
	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta			
(Constat)	-.496	.299			-1.659	.098
DISTINCTION	-.013	.035	-.013		-.368	.713
NON-TYPICAL	7.090E-02	.029	.075		2.483	.013
OPENNESS	8.071E-03	.035	.008		.230	.818
FUN	7.344E-02	.040	.067		1.825	.069
FAVORABLE	5.815E-02	.027	.055		2.167	.031
HUMOROUS	9.366E-02	.037	.081		2.548	.011
CONVENIENCE	6.047E-02	.028	.055		2.152	.032
DURABILITY	-.033	.025	-.030		-1.346	.179
VERSATILE	-.013	.020	-.033		-1.568	.117
REALITY	.152	.030	.128		5.051	.000
FRIENDLY	.677	.025	.740		27.286	.000

a. Dependent Variable : preference

Figure 9: MP3 images used in this test

attributes of MP3 products were found and 12 samples were selected via cluster analysis. The attribute categorization of MP3 products were performed as seen below.

General form / complex, simple / LCD Y,N / LCD type / Necklace type / Control button locations / Control button types / Color Y,N / Color / Overall shine / Recording / Charging method / Capacity / Thickness / Button control method / Price / Radio / Direct encoding / Video play / USB host

After performing cluster analysis through attribute categorization of MP3 products, 12 groups and products

Figure 10: MP3 Cluster Analysis Result

Figure 11: MP3 Emotional Design Products

were selected as seen below. In order to select emotional products from MP3 products selected above, the level of emotional designs for the 12 were performed and four products were selected. Tests were performed by measuring the 12 items for design creativity on a 7 point scale and were performed by a total of 40 design majors in graduate schools.

Through regression analysis on MP3 products and design creativity, results showed that design creativity items for MP3s were related to uniqueness, favorableness, humor and convenience.

This survey of relationship between emotional design and creativity focused on the navigations. The experimental objects were size of LCD, functions, shape, etc. Navigations sampling 121 items introduced from 2002. Experimental method for extracting representative elements of influential factors was produced by cluster analysis as following these.

This survey of relationship between emotional design and creativity focused on the navigations. The experimental objects were size of LCD, functions, shape, etc. Navigations sampling 121 items introduced from 2002. Experimental method for extracting representative elements of influential factors was produced by cluster analysis as following these.

DMB / size of LCD / MAP / Blue-tooth / Multi-tasking / Screen division / MP3

After performing cluster analysis through attribute categorization of navigation products, 12 groups and products were selected as below. In order to select products with emotional elements from all the navigation products selected above, a study was done for the 12 groups and four products were selected. Tests were performed by measuring the 12 items for design creativity on a 7 point scale and were performed by a total of 40 design majors in graduate schools.

Regression analysis of MP3 player extract to factors

Table 3: Relationship of Design Creativity Items and Preference (MP3)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Const)	-.316	.585		-.541	.590
DISTINCTION	.235	.090	.227	2.621	.055
NON-TYPICAL	7663E-02	.054	.093	1.425	.157
OPENNESS	5.139E-02	.115	.044	.447	.655
FUN	-.207	.135	-.178	-1.538	.127
FAVORABLE	-3.02E-03	.056	-.003	-.054	.958
HUMOROUS	5.744E-02	.092	.053	.628	.532
CONVENIENCE	-1.11E-03	.051	-.002	-.022	.985
DURABILITY	3.802E-02	.051	.042	.753	.453
VERSATILE	-8.21E-02	.048	-.096	-1.708	.091
REALITY	8.555E-02	.048	.101	1.795	.075
FRIENDLY	.821	.065	.839	12.573	.000

a. Dependent Variable : preference

Figure 12: The navigation image was used for an experiment only

related with creativity were favorable, fun, reality and purchasing.

7. CONCLUSION

Summing up the contents of experiments above, creati-

ty factors for emotional design were non-typical, favorable, convenience, reality and purchasing but in MP3 player related with distinction, favorable, humorous and convenience as a single product. Also, there were 4 factors in navigation as favorable, humorous, reality and purchasing.

Therefore, factors in products of three of them which are MP3 player, navigation and all of emotional products have common properties as favorable and humorous. Synthetically, emotional design highly related with part of interest item in originality. Future performing study should be necessary to survey common characteristic elements in various products not only within MP3 and navigation.

REFERENCES

1. P. Bloch; Seeking the ideal form; product design and consumer response. *J. Market.* 59(3), pp.16-29 (1995).
2. Jung-Pyo Hong; User's Aesthetic Response to Direct, Mediating and Interactive Effects of Content Aesthetic and Form Aesthetics in Product Design (2003).
3. Suri, J. Fulton; Design expression and human experience; evolving design practice. In: McDona, D., Hekkert, P., Van Erp, J., Gyi, D. (Eds.), *Design and Emotion: The Experience of Everyday Things*. Taylor & Francis, London, pp.13-17 (2004).
4. Eun-Ju Kim; Development of the evaluation tool for creativity in design –mainly concerning children (2007).

KWON, Jong-Dae

Jong-Dae Kwon at the doctor course the department of design manufacture in Chonbuk National University, Korea. He finished second MFA in Industrial Design at Academy of Arts University, San Francisco. His research interests include aesthetic Design, design methodology, and design creativity, emotional design, and product design. He teaches Basic drawing, Design process, Product design, Presentation skill, and so on in Chonbuk National University. He is also a regular member of Korean Society of Design Science (KSDS), Korean Society for Emotion & Sensibility (KSES), and Korea Association of industrial designers (KAID). He has worked for the Shook Design in Palo Alto USA. He had consultations with many companies on product design.

HONG, Jung-Pyo

Jung-Pyo Hong is professor of the department of Industrial design at Chonbuk National University, Korea. He is also director of Aesthetic Design Lab. Major areas of research interests include aesthetic Design, design methodology, and design creativity. He has a doctoral degree in Chiba University, JAPAN, and he consecutively filled executive director of Design research lab, LG Electronics Inc. Also, he takes active in consultation of LG electronic design part and invited designer in Korea design awards, the jury of Korea design awards, director of Korea society for Emotion & Sensibility.