A Design Strategy of Cultural and Creative Products on the Global Market

Chi-Hsien Hsu[1(✉)] and Wang-Chin Tsai[2]

[1] Department of Culture-Based Creative Design,
National Taitung Junior College, Taitung 95045, Taiwan
`assahl6@gmail.com`
[2] Department of Product and Media Design, Fo Guang University,
Jiaoxi 26247, Yilan County, Taiwan
`wachtsai@mail.fgu.edu.tw`

Abstract. As the promotion of cultural and creative industries has become a trend in the current economic development strategies of various countries, the global market has gradually moved its focus towards local styles, and creative design applications have become a global competitive advantage of an industry. Therefore, the main purpose of this study is to investigate the effectiveness evaluation index and design strategy on cultural and creative products of consumer cognition and preference. First, we undertook a preliminary survey by means of literature review and opinions from a group of experts, and selected representative product samples and evaluation indices. Afterward, we analyzed the results of the questionnaire survey and found that cultural and creative products have distinct identity for participants. Furthermore, the participants considered that the main attributes affecting the overall presentation of a product, in order of degree of influence were "material, product function, aesthetic image, design quality, appearance style".

Keywords: Design strategy · Cultural and creative product

1 Introduction

With changing customers' demands and perceptions, the consumer market advances in an era of experience and aesthetic economics. In market economies characterized by profusion, corporations engage in activities and products filling their offerings with design, experience, ambiance, aesthetics, symbols and meaning [1, 2]. The distinctness of local culture and the structure of innovation-knowledge become the national core competency.

Europe and the United States specialize in taking traditional craft heritage items and combining them into brand marketing, developing them into fine boutique products such as Georg Jensen silver carving utensils and jewelry, Hermes handbags and scarves, Royal Copenhagen porcelain and so forth, attracting droves of consumers around the world. In recent years, Taiwan has also tried marketing cultural stories through creative design, commercializing local features and developing products of

distinct character, in the hope of injecting vibrancy into cultural industries and local industrial economies.

And as traditional culture is being used increasingly in design creativity, all kinds of conflict and controversy continue to arise on account of the different perspectives of the adherence of cultural workers to their traditional cultural values, the unrestrained vigor and ingenuity of creative design professionals, and the global marketing considerations of industry and commercial entities. This highlights the fact that cultural products are a kind of cross-industrial product, as well as the difficulties that will be encountered during processing. How to make cultural and creative design genuinely able to take into account both cultural heritage and global consumer demand is a question that as yet remains unanswered.

The purpose of this study is, specifically, to explore the views of consumer groups towards cultural and creative design and the differences in their evaluation of design. The research results can be used as a reference for design development in the relevant cultural and creative industries, as well as a reference to be used when preparing product development strategies.

2 Design Trend and Cultural Creativity

Each country has its own unique traditional customs, lifestyle and cultural style. With changing consumer needs, in addition to functionality and practicability, products today must be oriented toward consumer awareness and product demand [3]. Design has now become an innovative driving force for creating market opportunities. More advanced countries tend to treat design as an asset of economic advantage, and use it to promote their own image in the international community [4].

At present, the development of cultural and creative industries has become an important economic strategy, which is not only able to promote local and regional economic development, but also able to raise the quality of cultural life [5]. And traditional craft industries all over are focusing on both creativity and modernity, making every effort to ensure their craftwork can adapt to the needs of contemporary society. Handicraft design is both the cultural achievement of the handicraft business and also an inheritance of tradition [6]. For example, the Niigata in Japan, by its rich history of craftsmanship with creation of centennial values, has been pleased to present "Hyakunen-Monogatari" program to the world since 2005. This collection of crafts was designed to support as well as create a better style [7].

Because the influence of art and culture extends to the industry value chain, industry must create aesthetic innovations on the basis of consumer culture [8]. Therefore, product development that emphasizes cultural value, local characteristics and aesthetics has become critical to the design process. For example, Alessi has developed a unique evaluation equation theory, which is divided into the four items of communication, emotion, price and functionality. These are used as a basis for evaluation in selecting products for development [9].

3   Consumers' Expectations Towards Design

Good products must possess the ability to inspire the cultural codes of consumers. Only through leaving the consumer with a product imprint, and the interpretation of cultural codes can a deep emotional link be established between products and the consumer [10, 11]. Designers use sense of texture, shape, design and ornamentation properties, and through their design creativity give meaning to products, so that apart from a product providing features at the functional level, it may also be able to provide people with a further experience at the emotional level [12, 13].

When a product design has qualities of emotional awareness, then it can help user lines of thought turn from the rational to the emotional. Simply put, the design can take one from satisfaction with functionality to an emotionally moving experience. As to the memory and impression consumers have of products, consumption will not be limited to tangible objects, commodities have now evolved into being emotional, value, and cultural carriers. The value that consumers really want to buy is a stream of consciousness, or cultural codes [14]. Just as Europeans and Americans like the TALES of mythical rock ornaments, the reason for buying them may not be merely because they are China's Han Dynasty "Portrait Bricks," but rather that they are an emotional expression of Eastern culture.

The significance of a product can be divided into two dimensions: the designer's conceptual model, and the user's mental model; the ideal situation would be that the two must coalesce into one, for there to be a successful design [15]. In practice however, the designer's interpretation of the product and the user's interpretation are not necessarily the same. Many products possess ingenuity and innovation in their design, but are not commercially successful. Hence, the discrepancy between the perception and understanding of designers and users has consistently been a conundrum of the design and development process, which scholars and experts seek to overcome [16, 17].

4   Research Method

Product styles in response to consumer demand or market positioning vary with trends in the cultural and creative industries. There are products which have the appeal of geographical and cultural features, products which carry out design innovative, products which stress their abilities to move people emotionally, products aimed at meeting global marketing strategies, and so on. This study carries out a comprehensive investigation and analytical discussion.

This study used questionnaire survey methods, as well as MDS and SPSS statistical analysis to explore products with cultural and creative appeal, when entering international market competition, and the factors of cognitive design and evaluation which influence consumer groups. It thereby provides a reference for cultural and creative design-related fields of study or for industry. The questionnaires' execution was divided into two phases: the pre-survey and the formal questionnaire survey. The main purpose of the pre-survey was to collect product samples and design evaluation
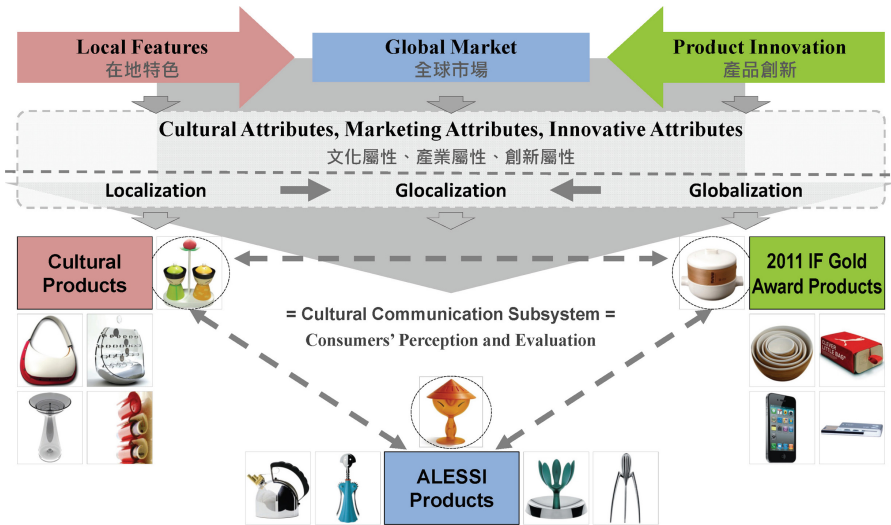
Fig. 1. The research framework

attributes, in accordance with the follow-up phase of the formal questionnaire. The study framework is shown in Fig. 1.

4.1 Selection of Stimulus Products and Evaluation Attribute

The study first conducted a pre-survey, extracting product sampling and design evaluation attributes in the three orientations of local features, product innovation, and global market [18–20]. After the initial screening, the results then went through the questionnaires and opinion surveys of nine experts in the three fields of cross-culture, innovation and industry. In accordance with the three orientations of local features, product innovation, and global market five product samples (a total of 15 samples) were selected (Table 1), and from these trans-orientation products were picked out as typical representative category products; P08 "Mr. & Mrs. Chin" salt and pepper set, P11 "Steamer Set" steamer pot, and P14 "Mandarin" Squeezer with goblet. All three possess elements of local features, product innovation and global market, though to differing degrees. In addition, 15 generally representative design evaluation attributes were selected.

4.2 Participants and Procedure

In this study, there were 373 of participants of the questionnaire survey which were deemed valid, of which 107 were males and 266 females. These participants were mainly college, undergraduate and graduate students, and all had taken more than one year of professional education in their respective fields of training. Participants can be divided into three main areas according to their educational background, namely, 119

Table 1. Three different categories of product samples

Local feature products – From Taiwan e-Learning and Digital Archives Commercial Application Competitions				
P01	P06	P08	P10	P15
"Ripple" martini cup	"Pinban Boat" handbag	"Mr. & Mrs. Chin" salt and pepper set	"Pearls Dropping on the Jade Plate" piggy bank	"Tile" magazine rack
Innovative products – From 2011 IF Gold Awards				
P02	P04	P09	P11	P13
"iPhone 4" smartphone	"Family Bowls" tableware	"Clever Little Bag" shoe packaging system	"Steamer Set" steamer pot	"USB-Clip" USB flash drive
Global marketing products – From Italian fashion brand Alessi				
P03	P05	P07	P12	P14
"Anna G." corkscrew	"Fruit Mama" fruit bowl	"9091" kettle	"Juicy Salif" citrus squeezer	"Mandarin" Squeezer with goblet

people from arts and humanities-related faculties, 106 from design-related faculties, and 148 from communication and business management-related faculties.

Before the participants actually filled in the questionnaire, we prepared a 10-min explanation to let the participants understand our research goal and the procedure of the survey. For this reason we explained to the participants the 15 experiment samples with pictures and written text. In the first part of the questionnaire participants fill in their personal information. The second part consists of the participant's design evaluation and the analysis of their perception of the experiment samples; we asked the participants to indicate their responses on a 9-point Likert scale according to their real feelings and experiences. Finally we asked the participants to select the product samples they like as well as important design qualities from 15 product samples and representative qualities, and rate them according to their preference.

5   Results and Analysis

The questionnaire survey results were first analyzed with Multi-dimension Scaling Analysis (MDS) to construct the participants' cognitive preferences space, and then using SPSS statistical software was used to carry out analysis and exploration. When using MDS, five tools are usually used to analyze data: KYST, INDSCAL, MDPREF, PREFMAP and PROFIT. And through the cognitive space constructed by MDPREF,

we can at the same time explore the results of participants' attribute cognition and stimulus preferences [21, 22].

5.1 Analysis of Preference Data in Attribute Vectors

After the completion of survey data archiving, the MDPREF software program was used, to identify potential assessment factors according to the participant's evaluation attributes, to construct the cognitive space of participants. Table 2 shows that the cognitive space of this study can reach an explanatory power of 85.55 % in Factor II, and reach an explanatory power of 96.09 % in Factor III. After Factor III, the decline rate in the explanatory power eases.

After analysis of the aforementioned cognitive space factor figures, further verification was made of the design evaluation attributes covered by each factor. In MDPREF data analysis, the components comprising the evaluation attribute of each factor could be found (Table 2). In Factor I, there was an obvious grouping phenomenon for attributes: A03, A01, A02, and A04. In the Factor II, there was another obvious grouping phenomenon for attributes: A11, A14, A13, A06, A05, A12, A07, A10, A09, and A15; however the weighting for A10, A09, and A15 was lower, and could be divided into subgroups for exploration. Attribute A08 was representative evaluation attribute for the Factor III.

In the preferential cognitive space framed by MDPREF, product samples (stimulus) are expressed as point coordinates, while evaluation attribute are expressed as vector quantities. And the correlation coefficient (between −1 and +1) is the data

Table 2. Proportion of variance of fifteen attributes

Attributes	Population Matrix (Vectors)		
	Factor I	Factor II	Factor III
A01 cultural characteristic	**-0.9890**	0.1001	-0.1090
A02 evocation of feelings	**-0.9836**	-0.1338	-0.1212
A03 background story	**-0.9964**	-0.0376	-0.0760
A04 special meaning	**-0.9589**	-0.2238	0.1743
A05 aesthetic image	-0.2583	**-0.9265**	0.2737
A06 innovative level	0.3559	**-0.9343**	0.0232
A07 design quality	0.2899	**-0.9188**	-0.2679
A08 product function	0.2821	-0.2328	**-0.9307**
A09 overall presentation	0.0289	**-0.8593**	-0.5107
A10 material	0.1631	**-0.8665**	-0.4717
A11 show self	-0.0060	**-0.9997**	0.0224
A12 pleasure	-0.0366	**-0.9209**	-0.3881
A13 unique idea	0.1326	**-0.9510**	0.2794
A14 appearance style	-0.1514	**-0.9656**	0.2116
A15 imagination	-0.2790	**-0.7970**	0.5357
Variance (%)	**50.93%**	**34.62%**	**10.54%**
Cumulative (%)	**50.93%**	**85.55%**	**96.09%**

Table 3. Correlation matrix of fifteen attributes

Correlation Matrix of Subjects														
A01														
23.59	A02													
12.12	15.36	A03												
29.65	21.42	21.25	A04											
83.68	69.48	75.85	60.75	A05										
113.77	103.68	108.10	97.87	45.14	A06									
110.28	96.81	103.38	96.10	46.69	24.76	A07								
101.57	97.08	101.64	112.05	96.57	73.72	58.43	A08							
93.50	81.67	**87.56**	85.68	50.88	40.55	23.38	48.37	A09						
101.27	**88.98**	95.27	**90.42**	51.79	44.24	24.54	52.61	19.73	A10					
94.43	84.57	**86.97**	77.71	38.07	31.68	32.18	78.23	38.38	44.62	A11				
90.66	78.76	84.15	81.51	49.07	37.10	30.40	56.65	22.03	37.60	34.80	A12			
103.63	**93.01**	96.46	82.65	33.15	24.08	37.34	**89.74**	49.83	51.30	27.03	42.52	A13		
87.94	77.10	80.06	68.38	27.92	38.02	42.26	**90.36**	47.13	52.57	17.86	40.64	24.69	A14	
82.87	71.30	74.88	59.20	27.04	52.29	61.35	111.90	66.67	69.70	42.17	58.09	33.19	28.79	A15

Diagram (top right of table):

A12 (90.66°) → A01 ; A14 (87.94°) → A02 ; A10 (88.98°) → A03
A13 (93.01°) ; A09 (87.56°) ; A11 (86.97°)

A10 (90.42°) → A04 ; A13 (89.74°) → A08 ; A14 (90.36°)

◎ A01 — A14 — A08
◎ A02 — A13 — A08

corroboration of the test of degree of correlation between the vector quantity. Converted into an intersection angle, for example, the correlation coefficient is 0 (ACOS = 0), expressing no relevance whatsoever between the two vector quantities, when its vector quantity intersection angle is equal to 90°, this expresses the participant's independent preference cognitive system, can be interpreted as a representative axial direction of preferential cognitive space [21, 22].

After ordering the evaluation attributes of the correlation coefficients, they were converted into intersection angles, as shown in Table 3. Observing the vector intersection angles of the evaluation attributes, a more obvious presentation of completely unrelated evaluation attributes can be found, and these evaluation attributes are: A01 and A12, A01 and A14; A02 and A10, A02 and A13; A03 and A09, A03 and A11; A04 and A10; A08 and A13, A08 and A14.

The above relevant angles shown are all within the scope of that which can be studied, indicating that they are mutually independent factors. A two-dimensional cognitive space can be framed, taking into consideration the amount of variation in the explanatory power of the cognitive space factors, A08 is the representative evaluation attribute of Factor III, thus a mixed selection can be made taking "A01-A14-A08" and "A02-A13-A08" as the main independent factors of the two groups, commonly representing interpretation as three dimensional factors constituting preference cognitive space (Table 4).

Table 4. Stimulus coordinates of the MDPREF solution

Stimulus Product		Normalized Stimulus Matrix (Points)		
		Factor I	Factor II	Factor III
P01		0.1927	-0.1825	0.4492
P02		0.2742	-0.4449	-0.6489
P03		0.0144	-0.1931	0.0112
P04		-0.3801	0.0011	-0.1946
P05		0.1283	0.0463	0.2252
P06		-0.3645	0.1671	0.0244
P07		0.1546	0.1471	-0.0297
P08		-0.3255	0.1691	0.0095
P09		0.2658	0.0011	-0.1581
P10		-0.1414	-0.2997	0.0740
P11		-0.2271	0.1017	-0.2328
P12		0.1686	-0.2541	0.4252
P13		0.4802	0.6633	-0.1024
P14		-0.2499	0.1862	0.0746
P15		0.0098	-0.1087	0.0733

5.2   Analysis of Preference Data in Stimulus Products

According to data MDPREF analysis, each products projection value of each evaluation attribute vector quantity, constituting the coordinate values of preference cognitive space, showing the preferences for each product sample in evaluation attribute vector quantities. Matching evaluation attribute component values, a preference cognitive space can be drawn, as shown in Fig. 2. From the collective vector quantities of the two groups, "A01-A14-A08" and "A02-A13-A08", we can explore the product's representative significance and relationships in the three factor's space.
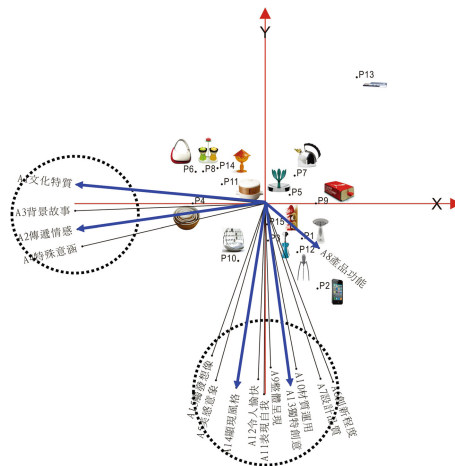

**Fig. 2.** Preference space from a three-dimensional MDPREF analysis

From the cognitive space framed by MDPREF, an approximation of distribution circumstances for each product sample can be seen; proceeding then by sorting product samples projection in axial projection values, we can interpret possible hidden significance in the cognitive space (Table 5). The MDPREF program's SECOND SCORE MATRIX data output, provides from cognitive space, a matching evaluation attribute vector quantity orthographic projection for each product sample. The size of the projection values indicates the sorting order of participant's assessment stimulus product for each product attribute. When the value of the projection is higher, this indicates greater relevance of the stimulus attribute to the participant, and vice versa.

Based on the MDPREF solution, a three-dimensional configuration is confirmed to construct a preference space. In Table 5, the main factors affecting participants' preference evaluation could be identified as: (1) "Cultural sensibility" dimension, which consists of cultural attributes including: cultural characteristic (A01), evocation of feelings (A02), background story (A03) and special meaning (A04). (2) "Qualia experience" dimension, which consists of innovative attributes including: aesthetic image (A05), innovative level (A06), design quality (A07), show self (A11), pleasure (A12), unique idea (A13), appearance style (A14), overall presentation (A09), material (A10), imagination (A15). (3) "Market orientation" dimension, which consists of product function (A08) in marketing attributes.

When the cognitive space of product samples features a grouping phenomenon, this demonstrates that product samples have similar evaluation attribute characteristics, and when the position of product samples is separated, this demonstrates that products possess different characteristics.

In cognitive space of the X-Y axes, it can be found that product samples P4, P6, P8, P11, P14 feature a grouping phenomenon, but P4 is slightly different in that it also has

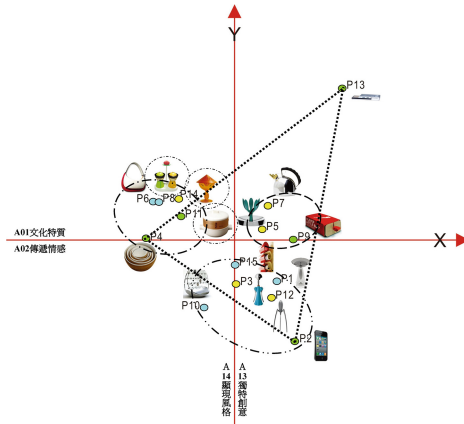**Table 5.** Dimension interpretation of MDPREF analysis
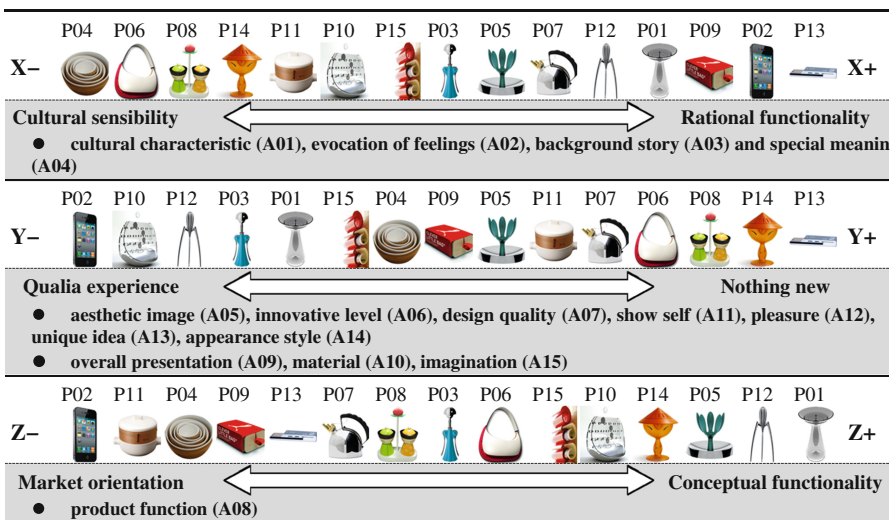
Fig. 3. Group stimulus space from X-Y Dimension for MDPREF analysis

a "cultural sensibility" dimension (X-axis), and is the most representative product sample of this; product samples P5, P7, P9 feature a grouping phenomenon; product samples P1, P2, P3, P10, P12, P15 also feature a grouping phenomenon, but P2 is slightly different in that it also has a "qualia experience" dimension (Y-axis), and is the most representative product sample of this; and P13 product samples exist entirely independently, and moreover are the product samples with the least "cultural sensibility" and "qualia experience" (Fig. 3).

5.3 Multiple Regression Analysis of Evaluation Indices to Predict "Product Preference"

To gain a deeper understanding of the key factors influencing the participants' overall perception of a product, this study used linear regression analysis, with multiple independent variables to predict the dependent corresponding variable values, and according to the size of the independent variables' explanatory power, from a number of independent variables, examined the effects and dependant variables [23]. Comprehensively predicting the overall presentation impression of products' through the participants' perception of design attributes, and consequently one by one exploring the attributes which will affect the design attributes of the overall presentation, the results are shown in Table 6. R-squared (determinant coefficient) was 0.866, indicating that independent variables possess an 86.6 % dependant variable explanatory power. The Durbin-Watson test was 1.820; a test result of between 1.5 and 2.5 indicates that no self-correlation exists between independent variables [24].

Overall, participants considered the major positive significant relevant attributes influencing the overall presentation of products, were A05, A07, A08, A10, and A14, of which the beta values of A10 and A08 were larger, demonstrating that they have greater predictive power towards their overall product presentation; while A02 and A03 constituted a significant negative correlation with the overall presentation of the

Table 6. Multiple regression analysis of design attributes to predict "overall presentation"

Dependent Variable	Predictor Variable	β-distribution	t	Sig.
	(Constant)		2.548	.011
A09 overall presentation	A01 cultural characteristic	.066	1.571	.117
（N=373）	A02 evocation of feelings	**-.098**	-2.029	**.043***
	A03 background story	**-.128**	-2.406	**.017***
	A04 special meaning	.064	1.327	.185
	A05 aesthetic image	**.197**	4.196	**.000****
	A06 innovative level	.070	1.237	.217
	A07 design quality	**.171**	2.873	**.004****
$R^2 = 0.866$	A08 product function	**.255**	7.101	**.000****
	A10 material	**.313**	7.453	**.000****
	A11 show self	-.031	-.803	.422
Durbin-Watson Test	A12 pleasure	.085	1.943	.053
= 1.820	A13 unique idea	-.107	-1.647	.101
	A14 appearance style	**.151**	2.692	**.007****
	A15 imagination	-.028	-.691	.490

product, demonstrating that participants believe that the more clear the use of attributes of a background story and evocation of feelings are, the lower the overall presentation of the product.

6   Conclusions and Suggestions

Culture creativity is a new factor for economic development; a country's development is not only dependent on its scientific and technological capability any more, but on the ability to create local culture, lifestyle and taste and to add value with a combination of art and business. Furthermore, in the era of aesthetic economy, a product must possess charm, beauty and an emotional and pleasant element in order to stand out from the other competitors on the market.

This study used analysis of the results of MDS and SPSS questionnaire surveys to explore the product design evaluation and views of consumer groups towards the local characteristics, product innovation, and global marketing of products. Products "Family Bowls" tableware (P4), "Pinban Boat" handbag (P6), "Mr. & Mrs. Chin" salt and pepper set (P8), "Mandarin" Squeezer with goblet (P14), "Steamer Set" steamer pot (P11), "Pearls Dropping on the Jade Plate" piggy bank (P10), each come from different design concepts, different design objectives, and the product designs of different company operational strategies. In the cognitive space of participants' preferred attributes, they displayed a significant grouping phenomenon, demonstrating that design attributes of cultural sensibility dimensions possess a clear identifying ability; in another word, cultural and creative products have a significant qualities of recognition for participants.

The participants considered that the main attributes affecting the overall presentation of a product, in order of degree of influence were material (A10), product function

(A08), aesthetic image (A05), design quality (A07), appearance style (A14); and that the more clear the use of attributes of background story (A03), evocation of feelings (A02) are, the lower the overall presentation of the product. Through survey and analysis of participants' design evaluations, this study provides strategic direction to the design and marketing fields in their development of new global products. Taiwan's Future design styles and the development of her cultural and creative industries can derive greater application and value from this.

References

1. Pine II, B.J., Gilmore, J.H.: The Experience Economy: Work Is Theater & every Business a Stage. Harvard Business School Press, Boston (1999)
2. Dobers, P., Strannegård, L.: Design, lifestyles and sustainability. Aesthetic consumption in a world of abundance. Bus. Strategy Environ. **14**(5), 324–336 (2005)
3. Norman, D.A.: Emotional Design: Why We Love (or Hate) Everyday Things. Basic, New York (2004)
4. Raulik, G., Cawood, G., Larsen, P.: National design strategies and country competitive economic advantage. Des. J. **11**(2), 119–135 (2008)
5. Chia, H.L.: The spring up of cultural and creative industries. In: Summary of Cultural and Creative Industries, 2nd edn, pp. 4–53. Wu-Nan Culture enterprise, Taipei (2008) (in Chinese, semantic translation)
6. United Nations Educational, Scientific and Cultural Organization: The Diversity of Cultural Expressions (2006). http://www.unesco.org/bpi/pdf/memobpi36_culturaldiversity_zh.pdf
7. Niigata Industrial Creation Organization: Hyakunen - Monogatari from Niigata Japan (2005). http://www.nico.or.jp/hyaku/english/concept/
8. Shih, P.C.: Cipher of Aesthetic Economic. Business Weekly, Taipei (2009). (in Chinese, semantic translation)
9. Lin, M.H.: Alessi: DreamWorks of Italian Design Boutique. Sungood, Taipei (2005). (in Chinese, semantic translation)
10. Rapaille, C.: The Culture Code: An Ingenious way to Understand Why People around the World Live and Buy as They Do. Crown Business, New York (2007)
11. Liu, W.K.: Introduction to emotion password. In: The Culture Code: An Ingenious way to Understand Why People around the World Live and Buy as They Do, pp. 14–16. Bookzone, Taipei (2007) (in Chinese, semantic translation)
12. Verganti, R.: Design, meanings, and radical innovation: a metamodel and a research agenda. J. Prod. Innov. Manage. **25**, 436–456 (2008)
13. Tun, F.W.: Legends as sources of inspiration: product design inspired by the legend of "the Dragon's nine sons". J. Des. **16**(4), 75–90 (2011). (in Chinese, semantic translation)
14. Cheng, C.C.: Marketing and planning for culture code (2009). http://media.career.com.tw/college/college_main.asp?CA_NO=349p349&INO=133
15. Norman, D.A.: The Design of Everyday Things. Basic Books, New York (1988)
16. Chu, P.Y., Chen, L.C., Yu, W.S.: Extracting the emotional index and developing the evaluation method for the perceived value of products. J. Des. **15**(1), 25–49 (2010). (in Chinese, semantic translation)
17. Chu, P.Y.: Exploring the emotional dimensions on product design with a decision analysis model. Unpublished doctoral dissertation, Tatung University, Taipei (2011) (in Chinese, semantic translation)

18. Alessi. http://www.alessi-funclub.com.tw/
19. iF Design Award (2011). http://www.ifdesign.de/index_e
20. National Science Council: Taiwan e-learning and digital archives program. http://teldap.tw/
21. Ke, K.J.: Understanding mascots–a case study of mascot in athletic game. Unpublished master's thesis, National Taiwan University of Science and Technology, Taipei (1996) (in Chinese, semantic translation)
22. Lin, R., Lin, P.C., Ko, K.J.: A study of cognitive human factors in mascot design. Int. Ind. Ergon. **23**, 107–112 (1999)
23. Chen, K.Y., Wang, C.H.: Advanced Statistical Analysis Using SPSS and AMOS, 2nd edn. Wu-Nan, Taipei (2011). (in Chinese, semantic translation)
24. Rong, T.S.: SPSS and Research Methodology. Wu-Nan, Taipei (2009)