

Semantic Evaluation Research on Image of the Packaging for Dishwashing Detergent of the B Corps.

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Social Corporate Responsibility (CSR) is an issue promoted and advocated worldwide in recent years, from which derives B Corps that both make profit from commercial activities and practice CSR. The semantic differentiation method was applied in the survey on the packaging of dishwashing detergent of B Corps. With increasing awareness of the impact of household cleaning products on the environment in recent years, more and more consumers turn to natural and environmentally friendly dishwashing detergent. This study selected the dishwashing detergent products from official websites of B Corps to explore respondents' perception of the visual image of the packaging and the factors possessed by packaging design of B Corps. Semantic evaluation method is adopted for the research on B Corps, including: (1) collecting packaging samples and image words by focus group method; (2) investigating packaging images with semantic evaluation method. The results show that participants' image perception would be affected by three factors: "international and professional", "innovative and attractive" and "authenticity and naturalness". At present, dishwashing detergent packaging of B Corps are mainly designed with the image of "international and professional", which focuses more on conciseness, grace and professionalism but comparatively lacks visual innovation, attraction and diversity. If using more complex visual design or special bottle type, it would relatively lack the design image and concept of reality, nature and sustainability that B Corps intend to convey.

Keywords: *B Corps; package; image; semantic evaluation*

1 Introduction

Under the industrial movement and the operation of capitalism, many products unfriendly to the environment have been created, and many environmental and social problems have also been caused. Due to the serious environmental pollution problems and the rise of consumers' awareness of environmental protection, governments, non-profit organizations, social enterprises and other organizations have begun to improve the problems. In recent years, there have been emerging social enterprises called B Corps that take into account both profits and fairness. These companies manipulate their own power to make improvement and bring benefits to all participants. On one hand, they can get operating profits for themselves by sell good commodities. On the other hand, with ability to bring benefits both to the environment and human being, they create employment opportunities

and help community transformation. In this way, they achieve “self-interest” by means of “altruistic” activities.

At present, most of the issues discussed are the marketing or operation mode of B Corps, with less emphasis placed on their product packaging design. However, as a good commodity packaging design can add profit to B Corps, packaging image can be regarded as an indispensable element for them. This study intends to deeply understand the current visual image and perceptual impression of B Corps to consumers. There are many brands and product categories of B Corps, which cannot be focalized and easily cause confusion. Dishwashing detergent is a product that can be used by consumers regardless of age and gender. Consumers are concerned about whether their daily cleaning products contain chemical residues that will affect health and cause environmental pollution. It has a close relationship with the sustainability and environmental protection advocated by B Corps and CSR. Therefore, this study selects Home/Personal Care's dishwashing detergent packaging as the survey sample.

The purpose of this study is to analyse the visual image of the packaging image of B Corps, mainly focusing on exploring the visual image and perceptual impression of B Corps dishwashing detergent packaging in the view of the subjects. Meanwhile, it tries to find out the current packaging preferences, and whether the packaging image conforms to the concept of B Corps. It is expected to serve as reference for designers and researchers in the future. The reference purposes of this study are as follows:

Understand consumers' impression of the dishwashing detergent packaging image of B Corps.

Summarize the factors of the dishwashing detergent packaging image of B Corps for reference and use by relevant scholars and designers.

2 Literature Review

Corporate social responsibility (CSR) refers to the company's promotion of its environmental and social welfare responsibilities (Sen & Bhattacharya, 2001). In recent years, CSR has become one of the key strategies used by companies to promote their own brands, especially those that need to stand out in mature markets. For brands, the appeal of CSR seems particularly attractive. Because more and more brands will use their “good works” or attractive “original stories” to stand out from the competition (Robinson & Wood, 2018). Active corporate social responsibility practices can enhance consumer attention, contribute to the cause of corporate support, and influence the impact of consumer social behaviour (Mantovani, Magalhães, and Negrão, 2017). In recent years, social enterprises have become a noted school of thought. The promotion of CSR has been carried out by government, schools and even in campus education. "Willingness to change" can lead to a better road. If enterprises begin to be willing to invest in social development, safeguard the earth's resources and sustainable development, and strive to be good for people and society, instead of regarding benefits as the primary goal, the world will become happier and more beautiful.

B Corps certification is promoted by the B lab in the United States. It makes customized quantitative assessment on enterprises based on industry category and employee headcounts, which focuses on five aspects, namely corporate governance, employee care,

environmental-friendliness, community care and customer influence. After passing the assessment, the enterprise will be awarded with a B Corps certification, which shall be re-verified every two years¹. The B Lab developed a B Impact Assessment tool and promotes this systematic (figure 1) to evaluate how a company's operations and business model impact his workers, community, environment, and customers (Honeyman, 2014). B Corps are committed to promoting a global movement for redefinition of a successful enterprise, with the expectation that one day the goal of all corporate competition will no longer be becoming the best enterprise "in the world", but be becoming the best enterprise "to the world". The establishment of a B Corps community will make it easier for the public to distinguish between "good companies" and "marketing-only companies". Moreover, it could promote public welfare company law, which will give business leaders the freedom to balance shareholders' rights and creation of social values. It helps enterprises to evaluate, compare and improve their social and environmental performance by using free benefit impact assessment. By using benefit analysis and Global Impact Investing Rating System (GIIRS) service platform, capital is directed towards impact investment.

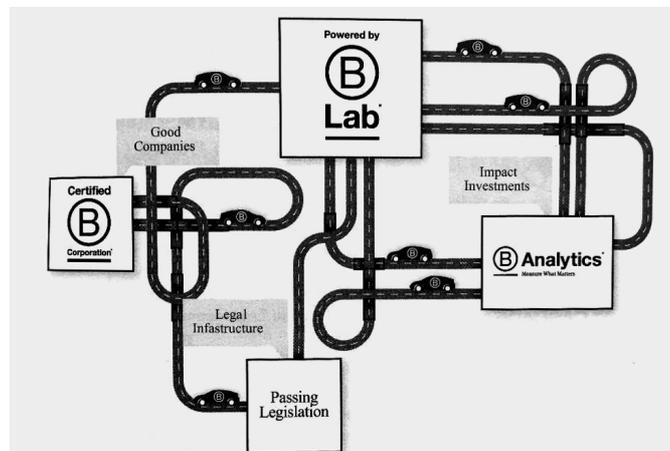


Figure 1. B Corps System.

Source: *The B Corps Handbook: How to use Business as a Force for Good.* (Honeyman, 2014)

The B Corps model has a social and environmental mission and purpose. The main goal is to create positive social impacts for stakeholders, rather than maximizing profits. The B Corps internalize the social and natural environment of their own businesses and try to participate in institutions. B Corps provide thought leadership around sustainable development, and drive broader change (Stubbs, 2017). At present, there are more than 2500 B Corps in the world, covering 70 industries and 64 countries, among which 27 are located in Taiwan¹. B Corps are good not only to the public but also to themselves. They can balance their efforts to make the world a better place with their own profit-making. They can work with enterprises with common goals, attract talents, and enhance the centripetal force of employees. In addition, they can leave a positive impression of their enterprise brand on consumers. Finally, a global group activity will be formed to strive for a better society. B Corps will grow stronger in the future.

The image of brand goods ultimately needs to be conveyed through the product packaging. Packaging design helps to establish sensory links between products and consumers.

¹ B Corps official website, Available at: <http://blab.tw/what-is-b-corp/> (last visited Dec. 2, 2018).

Products can bring personal contact and hope to the public, and even enhance public life. When people are surrounded by beautifully packaged products, they not only have a good feeling, but also have deeper impression of the products. Packaging is a common element of modern consumption, which provides a wide range of functions and consumer interests. The function of packaging is the most important in the consumer market. If the packaging is designed to be durable and unique, but without after using the packaging, it has no other function, which increases the environmental burden, leads to the warming of the earth and consumes a lot of energy and resources (Steenis, van Herpen, van der Lans, Lighthart & van Trijp, 2017). B Corps must be able to return to society through income, so socially responsible brands or packaging will be a bridge to communicate with consumers, and the benefits of brand or packaging will be the reason for B Corps to give back to society.

What should the image of a B Corps convey to consumers? The product identity or image is formed from people's cognition of product. Through its own design in such aspects as colour, line, texture and structure, as well as the connotative meaning endowed by the environmental culture, the product forms the language it wants to convey. Basically, the linguistic image conveyed by these products is still considered from the point of view of human needs. Designer aims at the needs, feelings and ideas of human beings to design the linguistic image that shall be convey through the product shape in their minds (Chuang, & Kao, 1997). If the image that a product shall have is not judged only from the functional aspect, product image is a psychological feature. People present something in their minds through association or imagination. Although it is invisible in reality, they still think of similar pictures in their minds (Lin, 2009).

Based on the changes and evolution of designs of the shape, colour, material, structure and graphic image of commodity packaging, we can see the trend of the current social issues. Design can reflect the message of the product to consumers, from which consumers can know the brand spirit that its brand wants to convey. This study selects the packaging design of Dish Wash of B Corps as the research object. Through research and analysis about the packaging design of dishwashing detergent of B Corps, it tries to explore how design behaviour can solve the current social problems in the world, which is the most important issue to be faced outside the basic solution. From design competitions held at home and abroad in recent years, we can see the current design trend in the world. Papanek (2013) believes that before engaging in design work, designers must have their own social and moral judgment standards, that is, whether their design is helpful to the society. Designers must have empathy and shall not ignore social problems or waste resources to meet their own design expression. Only in this way can they produce a design that is really needed by the world and society.

3 Methods

3.1 Methods and processed

The purpose of this study is to explore people's perception of the visual images of the dishwashing detergent packaging in B Corp, which needs to be investigated objectively. Therefore, most quantitative visual opinions are adopted in this study. The research methods are focus group method and semantic difference questionnaire method. Firstly, we searched for the dishwashing detergent packaging in Home/Personal Care category of B Corp, and used focus group method to select 10 different packaging samples. Meanwhile, we also

collected packaging-related image words, which were converted into adjectives with KJ method by professionals with design background. At the third stage, we conducted image questionnaire survey by distributing image questionnaires through the network. 171 net users of different age groups from design and non-design-related departments were investigated by snowball means. After the questionnaires were collected, statistical analysis was carried out by SPSS.

3.2 B Corps packaging samples screening

In this study, packaging samples were collected from the official websites of B Corp². The products identified are those that are used by most age groups regardless of gender and with packaging related to nature and environmental protection. Therefore, the researcher selected the dishwashing detergent products from the industry category Home/Personal Care. The search time of packaging brands and samples was before November 10, 2018. There were 129 enterprises in the Home/Personal Care classification, from which the researcher searched for all the dishwashing detergent products and obtained 15 samples. A focus group including 5 professionals with design background selected largely different packaging designs from these samples. Finally, 10 samples were selected as the tested samples.

Table 1 B Corp packaging sample.

Sample No. /Brand	01 method	02 earthy	03 little innocents	04 baleco	05 cha tzu tang
Sample					
Sample No. /Brand	06 BoulderClean	07 dephis eco	08 EO	09 made of	10 Dr. bronner's
Sample					

3.3 Selection of adjective vocabulary

For the sematic evaluation survey to understand the image of packaging design for the dishwashing detergent 's, we need to collect enough image words, establish adjective vocabulary data, and set up appropriate adjective vocabulary. After collecting the image vocabulary of relevant documents and books about packaging design and eliminating repetitive adjectives, the researcher obtained a total of 150 words, which were then classified by five professionals with design background and sorted and revised with KJ method. Finally, a total of 12 groups of image vocabulary were selected.

² B Corps official website, Home / Personal

Care , <https://bccorporation.net/directory?search=&industry=Home%20%26%20Personal%20Care&country=&state=&city=&page=4> (last visited Nov. 11, 2018).

Table 2 Packaging adjective vocabulary.

conservative–innovative	dull–attractive	artificial–nature
rough–exquisite	affordable–expensive	abstract–real
ordinary–unique	plain–colourful	indifferent–cordial
dirty–clean	amateur–professional	local–international

3.4 The questionnaire

The questionnaire is divided into two parts. The first part is the basic information about the respondents, including the gender, age, whether the respondents have design background, monthly salary and education background. The second part is to design a semantics analysis scale for the matched packaging image words to investigate the packaging image of 10 B Corps. Each tested packaging has 12 groups of vocabulary, and each vocabulary is composed of two relative adjectives at the ends of the scale. The scale has grades from 1 to 7 from left to right. Taking "conservative-innovative" as an example, 1 score represents "very conservative", while 7 scores represent "very innovative".



Figure 2. Semantics Scale

In this stage, the questionnaire survey method is used to fill in and answer the questions on the internet. The 10 B Corp sorted out by Table 1 are: 01 Method, 02 Earthy, 03 Little Innoscents, 04 Baleco, 05 Cha Tzu tang, 06 Boulder Clean, 07 Dephis Eco, 08 EO, 09 Made Of and 10 Dr. Bronner's, among which the dishwashing detergent packaging products is used as the sample to understand the audience's perception and feeling of the sample. The on-line questionnaire survey was conducted from November 27 to December 7, 2018 by convenience sampling, with 171 respondents receiving the survey, including 65 males (37.4%) and 106 females (62.6%); the majority of respondents are aged between 26 and 35 (51.5%) and are with educational level of universities (56.7%) and research institutes (33.3%).

3.5 Analysis

After the questionnaires were collected and coded, SPSS statistical software was used to make reliability analysis, descriptive statistics, average value, standard deviation, factor points, factor analysis and cluster analysis. Through data analysis, this research investigated the packaging image of the dishwashing detergent of B Corps and summarized the factors of packaging image.

4 Results

4.1 B Corps Packaging Image Analysis Results

Preliminary reliability analysis was carried out on the test results with Alpha value model. The Cronbach Alpha value is 0.949 based on the analysis, which shows that this study has acceptable reliability.

Table 3 Reliability analysis.

Cronbach's Alpha	Cronbach's Alpha Base on Standardized Items	N of Items
0.949	0.949	120

In Table 4 descriptive statistics, we can see that the lowest average score falls to the item “plain/colourful” (M=3.67), indicating that respondents don’t have strong feelings about this image item, while the highest average score falls to the item “dirty/clean” (M=5.88), representing that the average samples give a clean image feeling. There is a high standard deviation in three adjective groups, namely conservative/innovative, affordable/expensive, ordinary/unique, showing big differences in the feelings of these three image groups.

Table 4 Descriptive statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
conservative–innovative	10	2.4561	5.5380	4.022790	.8514142
rough–exquisite	10	2.4094	4.9766	4.162590	.7466761
ordinary–unique	10	2.4094	5.5205	4.053810	.8192503
dirty–clean	10	4.0643	5.8830	5.039180	.5302648
dull–attractive	10	2.4620	5.2515	4.129830	.7631674
affordable–expensive	10	2.3158	4.9240	3.936840	.8409307
plain–colourful	10	2.8129	4.7251	3.673110	.7047393
amateur–professional	10	3.3450	5.1170	4.451470	.5450802
artificial–nature	10	2.5556	4.7368	3.986560	.7457758
abstract–real	10	3.5439	4.9591	4.240940	.4077156
indifferent–cordial	10	3.1579	4.6784	4.152050	.4932730
local–international	10	3.4444	5.1637	4.402910	.5310323
Valid N (listwise)	10				

Table 5 shows the design characteristics of the dishwashing detergent packaging image of the tested samples. The average data showed high or low image adjectives, indicating that the sample had the image. According to Table 4, Sample 01 had the most “clean” image, Sample 02 had the most “natural”, “real” and “cordial” image, Sample 03 had the most “exquisite” image, and Sample 04 had the most “expensive” image. The images of Sample 05 are the most “innovative”, “unique”, “professional” and “attractive”. Sample 07 is the most “conservative”, “rough”, “ordinary”, “dull”, “affordable”, “plain” and “artificial” and the image of Sample 08 is “colourful”, while other samples don’t have prominent images. The average scores of packaging images are shown in the following list:

Table 5 Average score of packaging images.

Sample No.	01	02	03	04	05	06	07	08	09	10
Adjective vocabulary	SD									
conservative–innovative	4.06	3.41	4.02	4.46	5.53	4.25	2.45	4.80	3.90	3.29
rough–exquisite	4.67	4.27	4.97	4.70	4.49	3.63	2.40	4.60	3.98	3.85
ordinary–unique	3.91	3.67	4.05	4.69	5.52	4.02	2.40	4.68	3.97	3.59
dirty–clean	5.88	5.33	5.46	5.57	4.67	4.91	4.06	4.98	4.75	4.74
dull–attractive	4.23	4.03	4.51	4.67	5.25	3.98	2.46	4.63	4.04	3.46
affordable–expensive	3.62	3.84	4.70	4.92	4.87	3.15	2.31	4.49	3.42	4.00
plain–colourful	3.01	3.56	3.22	3.10	4.69	4.39	2.81	4.72	3.78	3.39
amateur–professional	4.56	4.26	4.87	4.94	5.11	3.97	3.34	4.87	4.09	4.44
artificial–nature	4.66	4.73	4.45	4.70	4.19	3.07	2.55	3.42	3.99	4.06

abstract–real	4.66	4.95	4.35	4.45	4.01	3.88	3.97	3.54	4.32	4.22
indifferent–cordial	4.57	4.67	4.48	3.95	4.29	4.39	3.15	3.84	4.52	3.61
local–international	4.57	4.21	4.90	5.16	4.13	4.07	3.44	5.01	4.00	4.50

4.2 Factor analysis of B Corps package image

Based on 171 participants' perception of 10 Dish Wash packaging samples of B Corps and 12 groups of semantic adjectives, the principal component method was used to extract the factors, and then the maximum variation method was used to make the rotation analysis. The following three data were obtained: (1) the total variation scale of semantic factor analysis (table 6); (2) the factor analysis load scale (table 7); (3) the factor acquisition point table (table 8).

Using Kaiser Criteria to retain the factors with eigenvalues greater than 1, three common factors were obtained. The cumulative variation was 93.5%, representing 90% of the total variation. Referring to Osgood's three main factors of semantic space proposed in 1969: evaluation, potency and activity, the first factor contained four image adjectives: local-international, cheap-expensive, amateur - professional, rugged - refined, named as "international professional factor", eigenvalue = 7.199, explanatory variance = 59.9%.

The second factor includes four image adjectives: plain-colourful, conservative-innovative, ordinary-unique, dull-attractive, image adjectives that tend to describe psychological feelings, with personal perception, feelings, personal preferences and preferences, mainly expressing the respondents' visual impression of the packaging, which are all related to the attraction degree of the packaging of B Corps, named as "innovative and attractive factor", eigenvalue=2.864 and explanatory variance=23.8%.

The third factor also contains four image adjectives: abstract-real, indifferent-cordial, artificial-natural, dirty-clean, with tendency toward product power and functional description. The main purpose of the third factor is to express the different visual perceptions of product functions described by the respondents, which are all related to the cordial and real feelings of packaging of B Corps. Therefore, it is named "cordial natural factor". The eigenvalue was 1.159 and the explanatory variance was 9.6%.

Table 6 Total variance Explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.199	59.994	59.994	7.199	59.994	59.994	4.609	38.410	38.410
2	2.864	23.863	83.857	2.864	23.863	83.857	3.576	29.801	68.211
3	1.159	9.658	93.515	1.159	9.658	93.515	3.037	25.305	93.515
4	.460	3.836	97.351						
5	.170	1.419	98.770						
6	.084	.699	99.469						
7	.036	.302	99.770						
8	.020	.167	99.937						
9	.008	.063	100.000						
10	3.600E-	3.000E-	100.000						

	16	15							
11	-6.353E-17	-5.294E-16	100.000						
12	-3.817E-16	-3.181E-15	100.000						

Table 7 Total variance Explained.

Adjective vocabulary	component		
	Factor 1	Factor 2	Factor 3
local–international	.941	.047	.105
affordable–expensive	.869	.389	.135
amateur–professional	.859	.450	.168
rough–exquisite	.777	.357	.484
plain–colourful	-.032	.928	-.232
conservative–innovative	.479	.851	.054
ordinary–unique	.562	.795	.102
dull–attractive	.614	.717	.306
abstract–real	.055	-.409	.873
indifferent–cordial	.019	.438	.868
artificial–nature	.584	-.012	.765
dirty–clean	.599	-.048	.696

The results of factor analysis in this study show that the evaluation of the dishwashing detergent packaging of B Corps can be made from three factors: international professional, “innovative and attractive” and cordial natural factors, which be assisted with cluster analysis in the next stage to examine the correlation of samples from the cluster way of packaging samples, and the appropriateness of image definition of packaging factors in B Corps in order increase the objectivity of this study.

Table 8 Factor Score.

Sample	Factor 1 international professional	Factor 2 innovative and attractive	Factor 3 cordial natural
01 method	0.20954	-0.50142	1.26963
02 earthy	-0.56349	-0.28881	1.55140
03 little innoSCents	0.93244	-0.34823	0.45409
04 baleco	1.58735	-0.56788	0.00936
05 cha tzu tang	0.09774	1.87237	-0.17812
06 BoulderClean	-1.16322	0.91859	-0.17045
07 dephis eco	-1.41314	-1.44101	-1.43108
08 EO	0.88913	0.87679	-1.36671
09 made of	-0.97126	0.40731	0.55892
10 Dr. bronner’s	0.39491	-0.92772	-0.69703

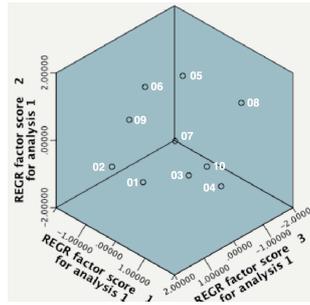


Figure 3. Factors scatter plot (3 factors)

4.3 Cluster analysis of B Corps package model

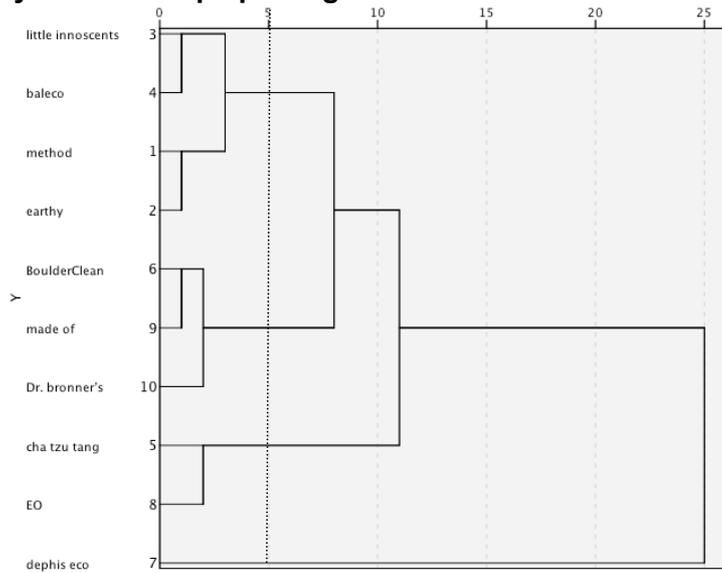


Figure 4. Cluster analysis of B Corps package model

Table 9 B Corps package cluster.

First Cluster	03 little innocents 	04 baleco 	01 method 	02 earthy 
Second Cluster	06 BoulderClean 	09 made of 	10 Dr. bronner's 	
Third Cluster	05 cha tzu tang 	08 EO 		
Fourth	07 dephis eco			

Cluster				
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Cluster analysis is based on objective clustering of the common attributes of the samples. There are small differences within the same cluster but large differences among the groups. In this study, the tested samples are clustered on average. With Ward's clustering method of hierarchical cluster analysis, the interval measurement of the square of the distance between Euclid lines was used to cluster the tested samples and form a tree structure of clusters. Figure 4 is a tree structure of the cluster analysis of B Corps packaging, including four clusters. The analysis is as follows:

Samples 3 and 4 in Cluster 1 tend to be highly “international and professional”, while Samples 1 and 2 are “cordial and natural”. All the 4 packaging samples give mild and lively colour feelings and their graphic designs give natural and intimate feelings, so they are defined as “real and natural cluster”. After a comparison in the factor point table of Cluster 2, it can be known that Sample 6 is highly innovative and attractive, Sample 9 has high cordial and natural factor, while Sample 10 is highly professional and international. All of the samples obtain points in respective factor items. Three packaging samples have a preference for cold colour and use informative graphics and text as layout materials in graphic design, presenting a clear visual style, which are therefore defined as Rational and Pure Cluster. Samples 5 and 8 of Cluster 3 obtained low points in “cordial and natural” factor, but higher points in “innovative attractiveness” and “international and professional”. These two packaging samples have such features as unique colour, vivid graphic design techniques and concise information, and therefore are defined as “international and innovative cluster”. The fourth Cluster is Sample 7, which has a negative point under three factors and nearly the same points under three factors. From the analysis about the packaging sample, it can be known that Sample 7 is more conservative in the choice of packaging materials, more straightforward and flat in graphic layout design, and doesn't have special memory points, and so it is defined as “traditional and flat cluster”.

5 Discussion

In this study, the dishwashing detergent packaging design of B Corps was taken as the theme. After investigation and analysis, three factors affecting packaging image were obtained by collocation factor analysis, namely “international and professional”, “innovative and attractive” and “cordial and natural”. From cluster analysis of packaging samples, the homogeneous packaging was classified into the same type, and four different types of clusters were obtained: real and natural group, rational and pure group, international innovation group and traditional and plain group. In summary, there are three reasons: (1) approximation of packaging image; (2) expression of design techniques; (3) conformity of the product requirements.

The three reasons concluded in this study are:

(1) Approximation of packaging image: Whether from the perspective of factor composition or cluster analysis, in terms of product packaging image, visual perception of bottle shape and other packaging design, product packaging with similar design techniques will naturally

be categorized as a group with the same or similar image, that is to say, it is quite easy for the respondents to classify product packaging with common or similar design sense.

(2) Forms of expression of design techniques: Based on the above, art design techniques are the most critical way to express product images. As an image classification method, design techniques transform the image value transmitted by B Corps and the clean product images into visual symbols. The artistic design forms chosen by designers will affect the final image of packaging.

(3) Conformity of the product requirements: From the factor acquisition point and cluster analysis, it can be seen that it is easier to express the real and natural product image, followed by the international and pure images, while the rational and innovative images are more difficult to express.

Therefore, the degree of conformity between product requirements and B Corps will be changed by the design technique in the presentation of tonality and the expressio Packaging Sample 7 is an independent cluster; the respondents tend to have conservative and cheap product images, and the visual perception expressed by packaging design cannot get too much resonance of the respondents in the packaging materials and aesthetic level. Although it is unique among the sample cluster, after comparing it with the research sample data analysis and factor points, we can know that this presentation method is not an appropriate presentation of packaging design, as it cannot reflect the visual image of B Corps products. On the whole, through the respondents' conclusions on the image of B Corps packaging model, the results of factor analysis and cluster analysis can complement and support each other, thus deducing the appropriate visual image of B Corps product packaging.

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