ORIGINAL ARTICLE

A Study on the Attractiveness Factors of Wedding Dresses

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Abstract: The study explored the image style preferences of different lifestyle values for wedding dress consumers. Evaluation grid method (EGM) with Miryoku engineering were also used to construct attractiveness factors for wedding dresses evaluation. Then, weights of the attractiveness factors were further analyzed according to Hayashi's Quantitative Theory Type I. The results of correspondence analysis (CA) revealed that, on the belongingness seekers preferred the wedding dress image style of noble and formal. For self-realization followers, they preferred the image styles of noble and formal and attractive and charming while hedonists preferred the style of romantic and pretty. The results of quantification Type I analysis also indicated the categories of ball gown, mermaid cut, emphasis on neckline, slim fit cut, embroidered lace pattern, chiffon and yarn, long/short-sleeved, lotus leaf hemmed, pleated, waistband and back had statistically significant positive influences. The value and contribution of the study was to conclude the results of wedding dress attractiveness factor analysis for industries and wedding dress designers to utilize as their design references.

Keywords: *Wedding dress, Evaluation grid method (EGM), Lifestyles*

1. INTRODUCTION

Wedding is not only a ceremony, but also a performance. It is also the reason why bridal wedding dresses become delicate and majestic. Moreover, every bride dreams about and hopes her wedding to be unique and to make her feel like a superstar in her own wedding [1]. There has been a tendency in customized wedding products. Since the early 1960s, for the purpose of market segmentation in marketing, lifestyle research has replaced some early methods such as demographic variables, social hierarchy, and psychological characteristics and become a common tool to understand consumers and to satisfy the needs of different types of consumers. Personal values as beliefs acquired in daily life can influence people's points of view and the way they make decisions. Also, personal values belong to more psychological perspective, mainly focusing on people's points of view and the agreement or disagreement of a variety of events. Hence, people can achieve the realization of their values through purchasing process to satisfy their daily and psychological needs [2,3]. Hence, the study analyzed the lifestyle values of wedding dress consumers and applied evaluation grid method (EGM) with Miryoku engineering to investigate the reasons why wedding dresses are considered to be attractive based on their abstract, original, and concrete features. After the reasons were compared and analyzed from different consumer's aspects, attractiveness factors of wedding dresses were constituted.

The results derived from the analysis of wedding dress attractiveness factors were transformed into creative design plans to provide wedding dress designers and industries with references for wedding dress design.

Based on the aforementioned research motivation, the research purposes were mentioned as the follows:

The primary purpose of the study was to investigate the differences among bridal wedding dress consumers from distinctive lifestyle value clusters. The second purpose was to exam the lifestyle values and image style preferences of wedding dress consumers. Finally, the study established a design model of bridal wedding dresses based on the theory of Miryoku engineering.

1.1 Evolution of Wedding Dresses

Bridal wedding dresses were documented for the first time when Anne de Bretagne married to Louis XII of France in 1499 [4]. The tradition of wearing western wedding dresses in pure white could be dated back in 1840. A white wedding dress was first worn by Victoria, Queen of the United Kingdom, at her wedding. This had made white wedding dresses formally used as bridal wedding dresses [5]. Wedding dresses were considered to be explicitly socialized personal products. Wedding dresses contain not only practical values, but symbolic values as well. According to Maslow's Hierarchy of Needs theory, shopping for wedding dresses satisfied consumers with their needs to use, their psychological needs and their needs to acquire social recognition.

1.2 Lifestyle

The concept of lifestyles originated from sociology and psychology [6]. Theory of lifestyles was based on the theory of personal constructs proposed by Kelly [7]. Lifestyles also reflect the attitude and values of an individual or a group, including internal mind mapping and external behaviors. On the other hand, lifestyles might either be related to a person's attitude or the way an individual chooses to live [8]. The trend of fashion design can respond to consumers' lifestyle values in a direct and quick manner. It provides messages such as visual perceptions, aesthetic cognition, cultural differences, and values judgment. Consumers' decision on selecting clothing products also represents a certain kind of emotional projection or identification with social values. Stith adopted the list of values (LOV) scale, White American clothing consumers were divided into two groups, namely fashion seeker and non-fashion seeker. It began with a value classification based on the induction of personal values [9]. The result showed that in comparison to non-fashion seekers, fashion seekers focused more on excitement and pleasure and enjoyment in life. Consumers among the age of 18 to 35 were chosen to investigate their differences in Autumn-Winter Milan fashion styles and image recognition on the perspective of lifestyle values. The results showed that the combination of consumers' image perception in clothing with style preferences as a basis for market segmentation helped determine the target market. It is an effective way for marketing specialists and designers to not only define their product attributes but also better communicate with their consumers [10-12].

According to the above lifestyle theories, they study found out the fact that the common lifestyle dimensions in groups could be discovered through observing and analyzing the changes in consumer lifestyle values. Based on common dimensions, it helped designers predict the fashion trends to increase the benefits of design and development for wedding dresses. Furthermore, it established a basis for product development that provided designers with a better way to understand their consumers and to brainstorm design creativity utilizing emotional symbol value differences. In addition to products with technological breakthroughs, on the perspective of market needs, products could be considered to be innovative as long as the products can satisfy the needs of unsatisfied consumers in the market [13].

1.3 Evaluation Grid Method (EGM)

The methodology of Miryoku engineering was named as evaluation grid method (EGM) by Sanui in 1996 [14].

Mainly, highly involved groups are interviewed. Paired comparison of each characteristics obtained from case studies on consumers' behaviors is done so as to come out with authentic and reliable evaluations and opinions [15, 16]. Moreover, a clarified discussion on the similarities or differences among elements can help collect individual characteristics of the target object. This method is based on a consumer-oriented design concept to facilitate the communication between designers and consumers. EGM was applied to investigate aesthetic perceptions of a 2010 spring and summer collection of fashion clothing as well as popular attractiveness research [17]. The results indicated that attractiveness factors of popular design had influences on clothing attractiveness, revealing a statistically significant difference and positive correlation. Graphic cards of uniform design collected by yahoo search engine were used as research samples. EGM was used to construct attractiveness factors concerning uniform design. Weights of the factors were further analyzed according to Hayashi's Quantitative Theory Type I. The results demonstrated that Quantitative Type I factors showed a statistically significant positive correlation [18].

Based on the abovementioned theories and related literature of Miryoku engineering, this study aimed to investigate how wedding dress consumers subjectively evaluated their preferences for wedding dress design so as to identify the attractiveness factors of wedding dresses. Later, Miryoku engineering and EGM was employed to visualize the relations among the attractiveness factors. The factors were considered as the basis for the evaluation of wedding dress design in order to represent the essence of attractiveness to further create attractive wedding dresses.

2. RESEARCH METHODOLOGY

2.1 Research Procedures

The study combined lifestyles with EGM as the theory basis using lifestyle value dimension as the clustering standard. Correspondence analysis (CA) was implemented to analyze preferences of attractiveness factors in wedding dresses obtained from each cluster.

In the first phase, the lifestyle values survey was developed using self-report questionnaires. Seventy-one white wedding dress consumers were asked for their suitable time for interview appointments and intention to participate in the study. Then the researcher visited the participants in person. Subsequently, the questionnaire survey regarding lifestyle values was conducted and then explored using the focus interview to derive consumers' evaluation of the attractiveness in wedding dresses in

order to determine the attractiveness differences in each wedding dress. Fifty-four graphic cards of wedding dress design samples were observed by each participant in this phase. Graphic card samples with attractive features were selected to different clusters according to the different degrees of attractiveness, grouping into a high, moderate and low attraction to participants. The cluster samples were ranked the highest with the score of 9 points and the lowest with the score of 1 point, and samples that were not selected with zero point. Finally, the integral approach was used to compute the results obtained from each wedding dress. The dress ranked with the highest score was provided with a numerical value as 1. Compared to the dress with highest score, the score of each dress was individually divided by the highest score so as to show the differences in the attractiveness in each wedding dress. In the second phase, the research applied evaluation grid method with Miryoku engineering to aim to clarify various consumer needs on wedding dresses and to identify the attractiveness factors of wedding dresses. Five wedding dress designers with 3-year wedding dress design experiences were invited to perform an in-depth expert interview. In the interview, attractiveness factors were determined. The interview procedures were described as the follows. First of all, fifty-four types of samples were selected and categorized by participants based on their personal preferences. Next, the researcher conducted the EGM interview, during which the reasons why participants preferred certain dresses and how they categorized them were collected. Also, after the original evaluation items were decided, the participants were further asked to answer questions related to “bottom-up” abstract evaluation items and “top-down” concrete evaluation items. The data obtained were primarily qualitative data which required to be examined for several times. Before data analysis, the interview notes and recordings were organized first. Later, each interviewee’s wedding dress attractiveness EGM diagram was drawn. Next, the data was checked by the participants for its meaning and relation. Some unrelated data was deleted and meaningful data was confirmed. Finally, the participants were invited to verify homogenous answers and to give them consistent definitions and explanation so as to enhance reliability and validity of the qualitative data and further to increase the reliability of the interview results (Figure 1). In the third phase, six university lecturers from the department of fashion design were invited to integrate their opinions with the same opinions obtained from the EGM diagram of the five experts in enterprises in the previous procedure and to develop an integrated EGM diagram with regard

to the attractiveness in wedding dresses (Figure 2). The integrated model was implemented by incorporating evaluation items that were in common or with similarities with the items in the EGM diagram. The reason why abstract evaluation items and concrete evaluation items were integrated with the original evaluation items was because both categories of the items could supplement the original evaluation items. The abstract evaluation items was considered to be related to spiritual feelings while the concrete evaluation items provided the evaluated objects with substantial characteristics. The evaluation of wedding dress attractiveness factors was compared and

Figure 1: Diagram of evaluation grid method interview procedures

Figure 2: EGM diagram of white wedding dress attractiveness factors

Note: The marked number was shown as the total times of the vocabulary with the same meaning mentioned by five experts in enterprises in their interviews.

analyzed using the KJ method [19]. The analysis was shown as the follows.

1) The development of abstract evaluation items:

Abstract items were induced using KJ method and classified into five categories, attractive and charming, noble and formal, grand and fashionable, romantic and pretty and elegant and delicate as abstract evaluation attractiveness factors.

2) The development of original evaluation items:

Attractiveness evaluation items related original evaluation items were induced and classified into three categories such as design, contours and material as attractiveness factor.

3) The development of concrete evaluation items:

Attractiveness evaluation items regarding concrete concepts were organized. After gathering attractiveness evaluation items, object materials such as satin, lace, chiffon and yarn were reclassified and integrated due to their similarities.

Wedding dress attractiveness factors were classified, transformed, integrated and extracted from interviewees' perceptual impression to wedding dresses based on its characteristics. The crucial impression included original evaluation items, abstract evaluation items and concrete evaluation items. The study categorized attractiveness factors into five categories, that is, image style, design, contours, material and design details originated from wedding dresses Table 1. For wedding dress image style classification, five organized image styles such as attractive

and charming, noble and formal, grand and fashionable, romantic and pretty and elegant and delicate were characterized (Table 2). Correspondence analysis (CA) was implemented to analyze preferences of image style for wedding dresses obtained from each consumer cluster. Followed by Quantitative Type I to analyze the differences in wedding dress attractiveness factors such as design, contours, material and design details.

1) A total of ten dresses were characteristic of the image style as attractive and charming. The use of the dress categories were Ball gown (a2), Emphasis on neckline (b3), Chiffon and yarn (c3) and Lotus leaf hemmed, pleated (d4).

2) A total of five dresses were characteristic of the image style as noble and formal. The use of the dress categories were Slim A-line (a4), Prominent curvature (b4), Embroidered lace pattern (c2) and V-neck (d8).

3) A total of twenty dresses were characteristic of the image style as grand and fashionable. The use of the dress categories were Ball gown (a2), Prominent curvature (b4) and Chiffon and yarn (c3).

4) One dress was characteristic of the image style as romantic and pretty. The use of the dress categories were Cupcake dress (a5), Emphasis on neckline (b3), Chiffon and yarn (c3) and Waistband (d5).

5) A total of fifteen dresses were characteristic of the image style as elegant and delicate, The use of the dress categories were A-line (a1), Embroidered lace pattern (c2), Long/ short-sleeved (d3) and High-neck (d7).

Table 1: Integrated items for wedding dress attractiveness factors

Item	Image Style	Design	Contours	Material	Design Details
Category	Attractive and charming	A-line (a1)	Simple (b1)	Satin (c1)	One-shoulder (d1) Back (d6)
	Noble and formal	Ball gown (a2)	Emphasis on shoulder lines (b2)	Embroidered lace pattern (c2)	Corset (d2) High-neck (d7)
	Grand and fashionable	Mermaid cut (a3)	Emphasis on neckline (b3)	Chiffon and yarn (c3)	Long/ short-sleeved (d3) V-neck (d8)
	Romantic and pretty	Slim A-line (a4)	Prominent curvature (b4)	Embroidered beading (c4)	Lotus leaf hemmed, pleated (d4)
	Elegant and delicate	Cupcake dress (a5)	Slim fit cut (b5)		Waistband (d5)

Table 2: Integrated items for wedding dress image style

Category 1: Attractive and charming
Sample No.	01	02	04	07	13	21	26	41	48	54										
Category 2: Noble and formal
Sample No.	06	10	33	39	45															
Category 3: Grand and fashionable
Sample No.	08	09	14	16	17	18	19	22	23	25	27	28	30	31	32	34	36	38	40	44
Category 4: Romantic and pretty
Sample No.	03																			
Category 5: Elegant and delicate
Sample No.	05	11	12	15	20	24	29	35	37	42	43	47	52							

2.2 Research Design

2.2.1 Experimental samples

The study was conducted on the perspective of visualization using sample graphic cards in the experiment. A wide variety of wedding dress samples were collected, with a total number of 252 original images from the magazine, *Vivi Bride*, starting its publication in December, 1992. With the largest amount of each issue, over 80,000 copies of each issue were sold in Taiwan [20]. After a subjective evaluation of images, ninety-five images with unique characteristics such as clear and discernible style, figure and material were selected while images that were analogous to others or unidentifiable were eliminated. Moreover, KJ method was used by five wedding dress designers to remove samples with higher similarities. Finally, 54 wedding dress images were chosen as representative samples for interview graphic cards. To reduce interference from the images to participants, the photo editing software, Photoshop CS6, was used to remove unnecessary background images from the samples. The modified images were then printed out as 5"×8" color pictures for later data analysis and EGM samples.

2.2.2 Development of the list of values (LOV) scale in lifestyles

The list of values scale in lifestyles in the study was developed based on LOV scale by Kahle and related literature. A questionnaire associated to the scale was made to meet the research purpose. The design of the questionnaire was derived from the nine question items in the LOV scale, the classification of Taiwanese personality traits and a list of eight attributes selected by American respondents. The nine items were self-respect, sense of accomplishment, being well respected, security, warm relationships with others, sense of belonging, fun and enjoyment in life, self-fulfillment and excitement [21].

The Taiwanese personality traits consisted of religious skeptics, indifferentism, thrill-lovers, self-pursuers, makers, attention-getters, retreaters and ordinary people [22]. The list of eight attributes selected by American respondents included innovator, thinkers, believers, achievers, strivers, experiencers, makers and survivors [23]. After requiring LOV variables from the three studies [19-21], a nine-question quantitative questionnaire (Table 3) was made to evaluate

consumers' list of values in lifestyles. A 5-point Likert scale was used in the questionnaire for evaluation, with scores rating from five to one. Five points indicated very important while 1 showed very unimportant. The five-point scale consisted of the levels of strongly agree, agree, neutral, disagree and strongly disagree. The lower the total score was, the less disagreement the participants had.

2.2.3 Participants

In the study, purposive sampling and snowball sampling approaches were used. Research participants were recommended by family, friends, coworkers, or participants from case studies. A total of 71 consumer participants were mainly newlywed for the first time and had experiences in choosing wedding dresses.

2.3 Data Analysis

2.3.1 Factor analysis

Principal component extraction was used to extract common factors in the study. In order to explain each factor, an orthogonal (varimax) rotation was applied. Moreover, with the selection criteria based on Kaiser, KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) index exceeding 0.60 was considered suitable for factor analysis. Also, if the result of Bartlett's test of sphericity was significant, the data obtained was appropriate to conduct factor analysis [24,25].

2.3.2 Cluster analysis

According to the factor analysis result, lifestyle values were categorized into three factors, that is, self-expression value, entertainment value and life and sentimental value. Followed by a cluster analysis, samples were clustered into several clusters according to their characteristics so as to understand the basic characteristics of wedding dress consumers from each cluster. The two-stage clustering method was employed for clustering. Ward's method was first used to determine the number of clusters, including three clusters. In the second stage, a non-hierarchical K-means analysis was performed to select representative clusters.

2.3.3 Correspondence analysis (CA)

This study adopted consumer preferences as a critical indicator of attractiveness factors in wedding dresses. Correspondence analysis, a statistical method, dealing mainly with categorical data, was implemented [26]. The purpose

Table 3: LOV scale in lifestyles for wedding dress consumers

Question Items	
1. Like to be respected and interact with others	6. Pursue abundant resources and high wages
2. Focus on financial and psychological security	7. Like to make life special
3. Have family-oriented value	8. Capable of self-realization and financial independence
4. Like something innovative or adventurous	9. Easy-going and friendly
5. Consider income to be very important	

of the analysis is to explain the relation among categories with the variables in low-dimensional space. In order to demonstrate the correlation and corresponding location of different lifestyle value clusters and image style preferences, an easy-to-read and easy-to-understand 2D diagram was used to describe the data for important messages. The distance between each category location could reflect the relation between categories. The more similarities the categories had, the closer distribution of categories were.

2.3.4 Quantification theory type I analysis

It is used to calculate the scores of wedding dress attractiveness factors so as to results some important attractiveness factors which influenced participants' preferences of wedding dresses. The method is called multivariable techniques. One of the characteristics of multivariable techniques is to utilize categorized "qualitative data" as predictors (Quantitative data also need to be categorized based on multivariable techniques). The final calculated results of each category must be in weighted calculation to obtain quantitative data. [27]. The total value resulting from attractiveness evaluation of fifty-four wedding dresses by seventy-one participants was transformed into dependent variables (Figure 4).

The purpose of quantification theory type I analysis is to obtain the approximate linear functional relationship of the dependent variable, and other qualitative items. Weighted coefficient was used to explore the degree of influences of each item on dependent variables as the influences of measurement of explanatory variables on the intensity of the dependent variable in multiple regression analysis. In the method, each qualitative item was derived from several categories. It assumed that all the samples within each item were characteristic of one category. The category the sample assigned was 1 and the remaining categories were 0 so as to code the samples.

Along with the quantitative data resulting from the participants towards the samples to calculate the degree of influences of the items and categories on dependent variables [28].

The theoretical test in the study was significant ($\alpha = .05$). The result demonstrated that consumers showed the highest preferences for sample number thirty-two within fifty-four wedding dresses. Therefore, the score of 301 derived from sample thirty-two was considered as a denominator and the score of the rest of the wedding dresses was individually as a numerator. The total value of preferences of wedding dresses was transformed into dependent variables, showed as a line graph of preference evaluation of wedding dress in Figure 3. A statistical analysis in quantification theory type I analysis was implemented based on the features of four

Figure 3: Preference evaluation of wedding dress

Note: The number was shown as the distribution of the transformed value of wedding dress attractiveness based on the total scores.

Figure 4: Screen plot of consumer lifestyle

attractiveness items in a total of 22 categories conducted as explanatory variables to find out the preferences of wedding dress and the relation among each attractiveness factor. First of all, each attractiveness factor were transformed according to the items and categories of wedding dress. The wedding dress with the characterized item and category was defined as 1, and those without the characterized item and category were defined as 0. A IBM SPSS Statistics 20, statistical software, was used in a linear partial regression analysis to conduct the partial regression coefficient, partial coefficient of correlation and coefficient of determination. The partial regression coefficient multiplied by sample numbers of each category was weighted average showed in Table 6. Take item A as an example, it included partial regression coefficients of five categories. The derived equation 1 was showed as followings:

$$WA = \frac{(\beta_1 \times n_1 + \beta_2 \times n_2 + \beta_3 \times n_3 + \beta_4 \times n_4 + \beta_5 \times n_5)}{(n_1 + n_2 + n_3 + n_4 + n_5)} \dots \dots \text{(Equation 1)}$$

WA = Weighted average of the item

$\beta_1 - \beta_5$ = Partial regression coefficient of a1, a2, a3, a4, a5

$n_1 - n_5$ = Sample numbers of a1, a2, a3, a4, a5

$n_1 + n_2 + n_3 + n_4 + n_5$ = Total sample numbers

And so on, weighted average of four items was obtained individually. Partial regression coefficient of each category subtracted weighted average of each item to obtain category score of each category variable. The calculation equation was as followings:

$$CS = \beta - WA \quad \dots\dots \text{(Equation 2)}$$

CS = Category score of category

WA = Weighted average of the item

β = Partial regression coefficient of category

The influence of each evaluation item on predicted Y value for preferences was determined. The derived equation 3 was shown as followings:

$$\begin{aligned} Y = & y + i1a1 + i2a2 + i3a3 + i4a4 + i5a5 + j1b1 \\ & + j2b2 + j3b3 + j4b4 + j5b5 + k1c1 + k2c2 \\ & + k3c3 + k4c4 + l1d1 + l2d2 + l3d3 + l4d4 \\ & + l5d5 + l6d6 + l7d7 + l8d8 \quad \dots\dots \text{(Equation 3)} \end{aligned}$$

Y = Preference prediction

y = Preference parameter

i1, i2, i3, i4 and i5 represented partial regression coefficients of five categories with the characteristics of image style items of design, consisting of A-line (a1), ball gown (a2), mermaid cut (a3), slim A-line (a4) and cupcake dress (a5). j1, j2, j3, j4 and j5 represented partial regression coefficients of five categories with the characteristics of image style items of contours, including simple (b1), emphasis on shoulder line (b2), emphasis on neckline (b3), prominent curvature (b4) and slim fit cut (b5). k1, k2, k3 and k4 represented partial regression coefficients of four categories with the characteristics of image style items of material, including satin (c1), embroidered lace pattern (c2), chiffon and yarn (c3) and embroidered beading (c4). l1, l2, l3, l4, l5, l6, l7 and l8 represented partial regression coefficients of eight categories with the characteristics of image style items of design details, consisting of one shoulder (d1), corset (d2), long/short-sleeved (d3), lotus leaf hemmed, pleated (d4), waistband (d5), back design (d6), high-neck (d7) and V-neck (d8).

According to Quantification Type I analysis result, range was further investigated to explore the degree of influences of each item on dependent variables. Range was used to measure the differences of the maximum and minimum values in partial regression coefficients. Hence, the influence of each evaluation item on predicted Y value for preferences was determined.

3. RESULTS AND DISCUSSION

3.1 Analysis of Lifestyle Values

In the questionnaires of the study, the LOV scale in lifestyles indicated a Cronbach's alpha score of 0.765 meeting the acceptable standard proposed [29], in which a Cronbach's alpha score ≥ 0.7 is generally considered to be with high reliability. The results provided evidence that the questionnaires used in the study were with high reliability to examine consumers' lifestyle values. Factor analysis was implemented to classify consumers' lifestyle values into primary factor dimension and further the dimension of lifestyle values. The dimension of lifestyle values were clustered through cluster analysis so as to deeply understand the characteristics of lifestyle values of wedding dress consumers from different clusters.

3.1.1 Factor analysis of lifestyle values

In light of the tests, the result of Bartlett's test of sphericity was significant ($P < 0.001$), indicating a value of 193.234 and the result of KMO measure of sampling adequacy indicated a value of .676. The results suggested that factor analysis was appropriate for nine-question item questionnaire of lifestyle values used in the study. In the factor analysis, the value of factors was extracted based on the criteria shown as Figure 4. Factors with eigenvalues greater than 1 were accepted. In the scree plot, the factor numbered as three was found to be at the turning point of the downward curve; however, the slope of the curve started to straighten (Figure 4). Three factors were extracted and respectively explained as 30.408%, 19.330%, and 12.105% of the variance, 61.843% of cumulative variance explained. Therefore, the extraction of three value factors met the purpose of data reduction. Moreover, the three factors were named as "self-expression value", "entertainment value" and "life and sentimental value" on the basis of nine question items regarding lifestyle values (Table 4).

3.1.2 Characteristics of lifestyle values of clusters

The three cluster result was concluded, the first cluster comprising 26 participants (36.62%), the second cluster consisting of 11 participants (15.49%) and the third cluster including 34 participants (47.89%). Scores obtained above were all shown significant differences. In this cluster analysis, three clusters were extracted. Each cluster was compared with others on the cluster center of factor dimension. The three clusters were individually named based on the characteristics of each cluster as the followings. Each cluster was named according to its characteristics (Table 5).

Table 4: Summary of factor analysis of consumer

Rotated Factor Matrix						
Factor Name	Question Items	Explained variance %	Cumulative explained variance %	1	2	3
Self-expression value	2. Financial security and psychological safety considered important.	30.408	30.408	.808	-.102	.199
	5. Believes income is very important.			.601	.151	.099
	8. Can achieve self-realization and financial independence.			.552	.188	.162
	1. Likes to be respected and interact with others.			.542	.172	-.002
	6. Pursues enriched resources and highest possible income.			.475	.229	.076
Entertainment value	7. Like to make life special.	19.330	49.738	.084	.837	.377
	4. Like novelty or adventure.			.280	.759	-.128
Live and sentimental value	3. Hold family-oriented value.	12.105	61.843	.570	.034	.594
	9. Easily follows others' opinion and is kind in nature.			.067	.063	.552

Table 5: Cluster factor dimensions of consumer lifestyle values

Factor Dimension	Cluster 1	Cluster 2	Cluster 3
Self-expression value	.38048	1.07390	-1.82073
Entertainment value	-3.60445	-2.14378	1.51814
Live and sentimental value	.64714	-2.78680	-.32454

- 1) Cluster 1: Cluster one was examined with the highest scores of 0.64714 on the factor dimension of live and sentimental value, indicating participants in this cluster with family-oriented value and characteristics of easy-going and friendly. Therefore, participants in the cluster were named as “Belongingness seeker.”
- 2) Cluster 2: Cluster two was examined with the highest scores of 1.07390 on the factor dimension of self-expression value, indicating that participants in this cluster focused on financial and psychological security and considered income to be very important. In addition to be capable of self-realization and financial independence, they also pursued abundant resources and high wages. Hence, they were named as “self-realization follower.”
- 3) Cluster 3: Cluster three was examined with the highest scores of 1.51814 on the factor dimension of entertainment value, indicating participants in this cluster liked to make their life special and enjoyed something innovative or adventurous. Therefore, participants in the cluster were named as “Hedonist.”

3.1.3 Correspondence analysis of lifestyle values and image style for wedding dress

The evaluation of three lifestyle value clusters on image styles was analyzed. A comparison of the preferences of lifestyle value clusters and image styles was obtained through correspondence analysis. The correspondence analysis result was shown in Figure 5. The preference differences of different lifestyle value clusters on image styles can also be understood. The results indicated that the lifestyle value cluster of belongingness seekers preferred the wedding dress image style of noble and

Figure 5: The preferences of lifestyle value clusters and image styles

formal. For self-realization followers, they preferred the image styles of noble and formal and attractive and charming while hedonists preferred the style of romantic and pretty (Figure 5).

3.2 Attractiveness Evaluation and Quantification Type I Results

Four attractiveness items in a total of 22 categories were used as explanatory variables so as to conduct Quantification Type I analysis (Table 6). The transformed value indicated that consumers showed the highest preference for sample number one. Followed by sample number six with the score of 0.8 and 0.854 for sample number twenty-seven. As to sample number fifty-three and thirty-seven, both were scored under 0.2, respectively 0.110 and 0.163. Uchida proposed that Quantification Type I explanatory variables should be independent [30].

According to summary of regression model, the result indicated DW (Durbin-Watson) value was 2.099, approximately close to 2, showing no autocorrelated residuals. In addition, a statistical finding of Quantification Type I analysis also indicated a constant value of 0.435 and coefficient of determination (R^2) of 0.518. A modified R^2 of 0.505 was calibrated. In the study, the wedding dress attractiveness factors were transformed into a regression-based analytic model. The overall model was examined and obtained the conditional index (CI) of 24.427. As the conditional index was less than 30, it represented a moderate linearity. Therefore, each explanatory variable was retained in the model [31].

The regression analysis results of attractiveness factor related wedding dress design was shown as equation 1. The partial regression coefficients derived from each category had a influence on consumer preferences of wedding dress. The results were mentioned as the follows.

1) Consumers' evaluation of attractiveness factors was calculated and transformed into values. Sample number thirty-two, six, twenty-two and twenty-seven were with the score above 0.8. Particularly, the transformed value indicated that consumers showed the highest preference for sample number thirty-two, with the image style of grand and fashionable. The attractiveness factors, ball gown ($i2=0.154$), prominent curvature ($j4=0.013$) and chiffon and yarn ($k3=0.052$) were used, indicating positive influences on wedding dress design. Sample number six with the image style of elegant and formal

used the attractiveness factors of prominent curvature ($j4=0.013$), embroidered lace pattern ($k2=0.114$) and V-neck ($l8=0.185$), indicating a positive influence. As for sample number twenty-two and twenty-seven with the image style of grand and fashionable, both of them utilized the attractiveness factors of ball gown ($i2=0.154$), prominent curvature ($j4=0.013$) and chiffon and yarn ($k3=0.052$), showing a positive influence on wedding dress design.

2) Consumers' evaluation of attractiveness factors was calculated and transformed into values. The transformed value with the score under 0.2 was sample number fifty-three, with the image style of grand and fashionable, including the attractiveness factors of A-line ($i1=-0.066$) and one shoulder ($l1=-0.097$), showing a negative influence on wedding dress design. Also, sample number thirty-seven with the image style of elegant and delicate, using the attractiveness factors of cupcake dress ($i5=-0.058$), showing a negative influence on wedding dress design.

The results of range obtained from attractiveness factors were shown in Table 6.

1) Based on the Range value, it revealed that the design details (D) had the highest differences in coefficient values of 0.402, indicating the factor of design details was most crucial to influence wedding dress design, followed by design (A) and contours (B). Nevertheless, the factor of material (C) estimated the lowest value of 0.189, indicating that material showed less influence in wedding dress design.

Table 6: The results of Quantification Type I analysis

Item	Category	Partial regression coefficient (β)	Number of samples (NS)	Weighted average (WA)	Category score (CS)	Range
Design (A)	A-line (a1)	-0.066 (i1)	13	0.051	-.117	.275
	Ball gown (a2)	0.154 (i2)	17		.103	
	Mermaid cut (a3)	0.209 (i3)	6		.158	
	Slim A-line (a4)	-0.007 (i4)	15		-.058	
	Cupcake dress (a5)	-0.058 (i5)	3		-.109	
Contours (B)	Simple (b1)	-0.057 (j1)	4	0.070	-.127	.203
	Emphasis on shoulder line (b2)	0.067 (j2)	13		-.003	
	Emphasis on neckline (b3)	0.137 (j3)	12		.067	
	Prominent curvature (b4)	0.013 (j4)	16		-.058	
	Slim fit cut (b5)	0.146 (j5)	9		.076	
Material (C)	Satin (c1)	-0.005 (k1)	6	0.027	-.032	.189
	Embroidered lace pattern (c2)	0.114 (k2)	15		.087	
	Chiffon and yarn (c3)	0.052 (k3)	21		.025	
	Embroidered beading (c4)	-0.075 (k4)	12		-.102	
Design Details (D)	One shoulder (d1)	-0.097 (l1)	4	0.097	-.194	.402
	Corset (d2)	0.003 (l2)	5		-.094	
	Long/short-sleeved (d3)	0.143 (l3)	12		.046	
	Lotus leaf hemmed, pleated (d4)	0.195 (l4)	6		.098	
	Waistband (d5)	0.305 (l5)	9		.208	
	Back design (d6)	0.299 (l6)	6		.202	
	High-neck (d7)	0.176 (l7)	6		.079	
	V-neck (d8)	0.185 (l8)	6		.088	

- 2) In the factor of design details (D), the category, waistband (d5) had the highest score of 0.208, indicating that waistband showed great influences on wedding design rather than other categories, followed by back design (d6) with a score of 0.202, also indicating positively influences on wedding dress design.
- 3) Besides design details, the factor of design (A) also had a very high range value of 0.275. Among categories, mermaid cut (a3) attained a score of 0.158, indicating substantial positive influences.
- 4) As for the factor of contours (B), slim fit cut (b5) had the highest category score of 0.076, indicating a positive influence. The following was the category of emphasis on neckline (b3) which obtained a score of 0.67, indicating a high positive influence.
- 5) As for the factor, material (C), embroidered lace pattern (c2) with a score of 0.87, indicating a high positive influence.
- 6) The overall coefficient of determination (R^2) of 0.51 demonstrated that the four variables explained 50.5% of the variance in consumers' preferences for wedding dresses.

4. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

The lifestyle value cluster of wedding dress of hedonist was closer to the image style of romantic and pretty. It demonstrated that, in comparison of belongingness seekers and self-realization followers, hedonists relatively preferred the image style of romantic and pretty. An inference was conducted that the common lifestyle dimensions in groups could be discovered through the investigation of consumers' lifestyle values.

Based on the common dimensions, designers could be assisted to understand their consumers. On the perspective of market needs, products could be considered to be innovative as long as the products could satisfy the needs of unsatisfied consumers in the market.

4.2 Recommendation

Suggestions for industries and fashion designers: In the EGM interview, participants with different attributes could be invited to increase the reliability of the interview results for future study. As for the extraction of attractiveness evaluation items, data collected from participants could be better integrated with other opinions for follow-up studies. The results of follow-up studies may provide fashion designers with more comprehensive references database.

REFERENCES

1. E. Ehrman; *The Wedding Dress: 300 Years of Bridal Fashions* Paperback, V & A Publishing, 2011.
2. A. P. Lin; *Investigate Lifestyles, Personal Values, and Consumer Behaviors of Billiard Consumers in Taipei City* (Unpublished Master's Thesis), National Taiwan Normal University, Taiwan, ROC., 2003.
3. Y. H. Hsueh; *Business Employees National Cultural Value Research: Taiwan and Mainland China Compare Analysis* (Unpublished Master's Thesis), Chang Jung Christian University, Taiwan, ROC., 2000.
4. H. O. Chen; *Take the Example of "Bridal Photography Industry" for Discussing the Key Success Factors in Industrialization of Cultural and Creative Industries* (Unpublished Master's Thesis), National Sun Yat-sen University, Taiwan, ROC., 2005.
5. C. J. Chen; *Bridal Dress*, Artist Publishing, Taipei, 2013.
6. G. Kelly; *The psychology of personal constructs*, Norton, New York, 1995.
7. G. A. Kelly; *The Psychology of Personal Constructs*, W. W. Norton & Co., in William D., New York, 1955.
8. J. C. Tu; *Lifestyle Design: Culture, Lifestyle, Consumption and Product Design*, Asia-Pacific Press, Taipei, 2004.
9. M. T. Stith, and R. E. Goldsmith; *The social values of fashion innovators*, *Journal of Applied Business Research*, 9(1), pp.10-16, 1992.
10. C. H. Lin; *Explore the Differences of Cognitive between Fashion Style and Image from Lifestyle*, *Journal of Tainan Woman's College of Arts & Technology*, 24, pp.71-85, 2005.
11. R. Madrigal, and L. R. Kahle; *Predicting Vacation Activity Preferences on the Basis of Value-System Segmentation*, *Journal of Travel Research*, 32(3), pp.8-22, 1994.
12. B. Rice; *The selling of lifestyles*; *Psychology Today*, 1988.
13. D. S. Seetoo, J. F. Lee, and S. W. Wul; *Introduction to Business*, National Open University, 1985.
14. J. Sanui; *Visualization of users' requirements: Introduction of the Evaluation Grid Method*, *Proceedings of the 3rd Design & Decision Support Systems in Architecture & Urban Planning Conference*, 1, pp.365-374, 1996.
15. J. Sanui; *Visualization of users' requirements: Introduction of the Evaluation Grid Method*, *Proceedings of the 3rd Design & Decision Support Systems in Architecture & Urban Planning Conference*, 1, pp.365-374, 1996.

16. C. C. Chen, and D. F. Shiu; Exploring the Attractive Experience Attributes of Social Network Games, *Kaohsiung Normal University Journal*, 30, pp.63-83, 2011.
17. C. H. Lin, Y. H. Fang, and J. J. Chou; A Study of Fashion Attractive Elements, *Taiwan Textile Research Journal*, 21(1), pp.62-72, 2011.
18. C. H. Juan, and C. H. Lin; Application of Evaluation Grid Method and Quantification Type I to Attractiveness of for Uniform Design, *Journal of the Hwa Gang Textile*, 23(3), pp.165-170, 2016.
19. J. Kawakita; *Kawakita Jiro Method*, Chuokoron-shinsha, Tokyo, 1986.
20. Xueshu; <http://www.xueshu.com/>, 2015.
21. L. R. Kahle, and P. Kennedy; Using the list of values (LOV) to understand consumers, *Journal of Consumer Marketing*; 6, pp.5-12, 1989.
22. C. F. Lin; Classifications and Implications of Personality in Taiwan, *Chin-Yi Journal*, 20(2), 2002.
23. L. G. Schiffman, and L. L. Kanuk; *Consumer behavior*, The Wheetley Company, Inc. 1994.
24. H. F. Kaiser; Decisions with Multiple Objectives; An index of factorial simplicity, *Psychometrika*, 39, pp.31-36, 1984.
25. M. L. Wu; *Statistics analysis and application for SPSS*, Nicebooks, Taipei, 2003.
26. J. P. Benzécri; *Analyse des données*, Dunod, Paris, 1973.
27. H. Gotō; *Marketing research case study*, Wisdom & Knowledge, Taipei, 1996.
28. G. H. Tzeng; *Multivariate analysis and application*, Wunan, Taipei, 1991.
29. T. S. Jung; *Statistical products and services solution*, Wunan, Taipei, 2006.
30. O. Uchida; *Multivariate analysis for SPSS*, Tingmao, Taipei, 2010.
31. H. F. Lin; *Multivariate statistical analysis for SPSS*, Tingmao, Taipei, p.24, 2014.

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