

Analysis of Consumer Preferences for Cosmetic Essence-for-Men via Choice-Based Conjoint with New Design of Choice Sets

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Abstract

The sales volume of men's cosmetics has drastically increased in Korea. In recent years, men's needs for cosmetics have been diversified and the consumer demand for functional cosmetics has greatly risen. In particular, male consumers have become more interested in essence product that is a light and concentrated treatment to correct skin problems. This research analyzes consumer preferences for essence-for-men through the use of choice-based conjoint analysis. This approach is adopted since the task of respondents to choose the most preferred option from several alternatives closely mimics actual marketplace purchasing behavior by consumers. New technique for the construction of choice sets is suggested based on the balanced incomplete block design, to accommodate a larger number of product profiles. The proposed design for choice sets is balanced and provides a tool to filter the contradictory choices. Conjoint analyses are performed to assess the relative importance of attributes and identify the most preferred profile of essence-for-men with respect to attributes such as emphasized function, price, type of content, and design of container. Some differences are indicated in the analysis results between age brackets as well as between groups classified by the amount of fashion item expenditures.

Keywords: Consumer preference, essence-for-men, choice-based conjoint analysis, choice set.

1. Introduction

Annual sales of the cosmetics in Korea amounted to 10 trillion won in 2011 and are expected to continue to increase in volume. In recent years, men have become more interested in enhancing and maintaining their facial appearance. It has resulted in a drastic growth in the men's cosmetics market. The men's cosmetics market (which includes products for facial-care, hair-care, and body-care) grew from 530 billion won in 2007 to 800 billion won in 2010, and the volume was forecast at 1 trillion won for 2011 (Jeon and Jae, 2009; Economic Review, Aug. 23, 2011). The demand

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for cosmetics with enhanced functions has highly increased due to the diversified needs of male consumers. In particular, male consumers' interests in the concentrated solution product ('essence') are supported by various study results. The survey results of Hong (2008) indicate that 69.7% of men recognize the needs for functional cosmetics such as lotion and essence; in addition, Park (2008) indicates that the proportion of men using essence is the highest after sunscreen-cream among the usage of functional cosmetics. To keep pace with these trends, leading cosmetics companies are expected to focus on the development of new essence products that cater to the needs of men. Thus, this research attempts to analyze the preferences of male consumers for essence by applying a conjoint analysis approach.

Conjoint analysis has received considerable academic and industry attention as an approach that most realistically portrays consumer decisions. In particular, it has been widely employed in marketing researches that encompass new product development, pricing, positioning, and market share prediction. Moreover, with recent advances in computer software, conjoint analysis has been increasingly used in marketing research as an effective analysis tool. For example, Green and Srinivasan (1990), Green *et al.* (2001), Marshall and Bradlow (2002), Giancristofaro (2003) introduced the methodologies and applications of conjoint analysis. Wittink *et al.* (1994) investigated the commercial use of conjoint analysis in Europe. Kim (2005) conducted conjoint analysis to study consumer preferences for cellular phones. Shin *et al.* (2007) employed conjoint analysis to investigate the effects of cigarette warning labels and packaging on user's intention to quit smoking. Cassab (2009) applied conjoint analysis to mobile phone service to investigate the dynamics of multi-channel service attributes and their influence on consumers' loyalty intentions.

In the earlier step of the conjoint analysis, a set of product profiles are defined by the factorial design after attributes and levels of the product are identified. Then the preference measures of consumers are elicited usually by asking respondents to rate or rank their preferences for the profiles. Those rating-based and ranking-based conjoint analyses have been widely employed in marketing research since it is relatively convenient to measure consumer preferences by conducting a personal interview with a questionnaire. However, it can be very difficult for respondents to accurately measure preferences when they are asked to rate or rank a large number of profiles. In addition, the respondents could feel burdened and might even reject to cooperate with the interview process. Moreover, rating and ranking tasks have a serious flaw since decision making process by respondents in those tasks is vastly different from their actual purchasing behavior when they do not necessarily exhaust the entire list of products to give ratings or rankings. In contrary, the task of choosing one profile from a small group of profiles closely resembles the actual marketplace purchasing behavior of consumers. Moreover, the choice task is less cumbersome for consumers as it asks them to choose the most preferred one among three to five profiles. For these reasons, the choice-based conjoint analysis(CBCA) has been widely adopted in various areas of research and industry. Over the past several years, the marketing researchers became interested in using CBCA to predict consumer choices. For example, Elrod *et al.* (1992) and Chakraborty *et al.* (2002) compared the rating-based conjoint analysis and CBCA in their ability to correctly predict market shares under varying conditions. Moore (2004) compared cross-validity of rating-based conjoint analysis and CBCA. In addition, DeSarbo *et al.* (1995) performed the market segmentation via CBCA. Johnson and Orme (1996) reanalyzed data from 21 commercial studies conducted by the CBCA. However, CBCA is not without limitations since respondents are supposed to choose only the most preferred profile and it is impossible to measure how strong that preference is relative to other options. In this context, the statistical efficiency of CBCA might be lower than rating-based or ranking-based conjoint analysis;

however, CBCA was employed in this research despite the drawback since the approach still has valuable advantages to overcome the deficiencies of traditional conjoint analysis (Cohen, 1997).

2. CBCA Design

The main characteristic to distinguish CBCA from other types of conjoint analysis is that the respondents express their preferences by choosing the most preferred profile from choice sets, rather than by rating or ranking profiles. Therefore, after the attributes and levels of product are determined, a fraction of profiles are selected and systematically assigned to the choice sets prior to the CBCA experiment. An example of choice sets for the CBCA to investigate the design of retail checking accounts was presented by Ramaswamy and Cohen (2001). Toubia *et al.* (2004) showed a card of choice sets for the CBCA of cameras. Recently, Meibner and Decker (2009) designed choice sets for the research on single-cup coffee brewers. Gensler *et al.* (2012) constructed choice sets in the CBCA study of digital video recorders.

2.1. Design of profiles

The number of attributes affects the statistical efficiency and reliability of CBCA. The more attributes are added, the more profiles are required for the estimation of parameters in the conjoint model. If choice sets with large number of profiles are presented to the respondents, they might feel overloaded and choose the preferred profile without careful consideration. Therefore, appropriate number of attributes should be selected to be included in the experiment. The attributes and levels of men's essence were determined based on the results from a focus group interview and in-depth interviews. Since essence-for-men is a concentrated solution used to complement the performance of skin or lotion product, the emphasized function of essence products can be considered as the most important attribute. Jeon and Jae (2009) reveals that men in their 20s and 30s consider price, quality, skin compatibility and fragrance as the important attributes of men's cosmetics. Through a focus group interview, it was found that consumers regarded skin compatibility, emphasized function, fragrance, and price as important attributes for men's essence. In addition, a cosmetics expert suggested in an in-depth interview, two important attributes such as type of content and design of container. The attributes must be easily communicated for a realistic evaluation; however, actual fragrance and skin compatibility were unable to be described. Therefore, they were excluded from the set of feasible attributes. Each attribute was selected to be independent, distinct, and represent a concept that could be precisely implemented. Consequently, the authors selected four attributes of essence-for-men: emphasized function, price, type of content, and design of container. Next, levels of each attribute were defined to be mutually exclusive and to cover the full range of possibilities for the essence product; in addition, the criteria of practical relevance and feasibility were applied to define the levels. When the numbers of levels are large, it is difficult for respondents to accurately compare and contrast profiles. Therefore, the number of levels were restricted to be less than five. Hong (2008) reveals that men mainly agonize about their skin because of thick sebum, acne, wrinkles, dark spots, skin color, and dry skin. In accordance with the results, we selected four levels of the emphasized function such as treating acne or dark spots, restoring wrinkles, downsizing pores, and moisturizing skin. The price levels were determined based on actual prices of essence sold in department stores and road-shops. Table 2.1 shows the details of the attributes and levels. Accordingly, 144 different profiles were generated by the factorial design.

Table 2.1. Attributes and levels of essence-for-men

| Attributes | Emphasized function | Price (50ml) | Type of content | Design of container |
|------------|-------------------------|--------------|-----------------|---------------------|
| Levels | Restoring wrinkles | 30,000 won | Jell type | Pump style |
| | Downsizing pores | 60,000 won | Lotion type | Tube style |
| | Treating acnes or spots | 90,000 won | Cream type | Jar style |
| | Moisturizing skin | | | Ampoule style |

Table 2.2. Expansion of design 13

| Block | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| Treatments | C | J | A | H | A | H | A | H | B | I | A | H | B | I |
| | E | L | D | K | B | I | B | I | C | J | C | J | D | K |
| | F | M | F | M | E | L | C | J | D | K | D | K | E | L |
| | G | N | G | N | G | N | F | M | G | N | E | L | F | M |

2.2. Design of choice sets

The number of choice sets would be extremely large if we attempt to construct the choice sets by including all profiles. In this case, respondents would feel burdened to answer to all choice sets, and make inattentive choices. Thus, 14 profiles having D-efficiency of 0.947 were selected by employing the D-optimal technique suggested by Kuhfeld *et al.* (1994) and Kuhfeld and Tobias (2005). As CBCA elicits the preferences of respondent by asking them to choose the most preferred profile in a series of choice sets, it is very crucial to organize the choice sets systematically. The number of choice sets and the size of the sets should be determined prior to the construction of choice sets. Software such as CBC/Sawtooth suggests 12–18 as the optimal number of choice sets. In this research, the number of choice sets was determined to be 14, and the size of each choice set was determined to be 4. One possible technique for assigning the profiles to each choice set is to use the randomized design, which employs random sampling without replacement. However, this technique does not guarantee that choice sets are designed to be balanced. Thus, the authors employed a modification of the balanced incomplete block design (BIBD) to construct the choice sets. Since we selected 14 profiles to accommodate the parameters of conjoint model, any BIBDs could not be applied directly to this research. Therefore, a BIBD (Design 13) from Kutner *et al.* (2005) was modified as follows. In order to organize the choice sets with 14 profiles, the authors expanded Design 13 by adding a block next to each block. The added blocks had treatments of the numeric name $a_{ij} + 7$, where a_{ij} denoted the numeric name of the i^{th} treatment in the j^{th} block. For example, in Table 2.2, $a_{11} = 3$ for treatment C and $a_{21} = 5$ for E in block 1. Therefore, treatment J and L were assigned in block 2 as $a_{12} = a_{11} + 7 = 10$, $a_{22} = a_{21} + 7 = 12$. This procedure was performed in all the blocks to expand the basic BIBD.

A dual design of the expanded BIBD was obtained by interchanging the role of blocks and treatments, and then blocks and treatments were replaced, respectively, with choice sets and profiles. Consequently, a new design for choice sets was obtained in Table 2.3. The design has some desirable characteristics; each profile is assigned at most once in a choice set, each profile is included in exactly 4 choice sets, and pairs of two distinct profiles occur together in 2 choice sets.

A ‘no-choice’ option was included in the choice sets because of the following reasons. First, this option better mimics the decision making process in actual marketplace since consumers are not forced to choose any unsatisfactory profiles. Second, it makes the choice tasks more realistic, and encourages the respondents to be more cooperative with the conjoint interview. Third, it improves

Table 2.3. Design of choice sets based on the expanded BIBD

| Choice set | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|
| Profiles | C | E | A | C | A | A | A | D | F | B | D | B | B | B |
| | E | G | G | I | E | C | C | F | H | H | J | F | D | D |
| | G | I | I | K | K | G | E | H | J | J | L | L | H | F |
| | K | M | K | M | M | M | I | L | N | L | N | N | N | J |

Table 2.4. Part of choice sets for CBCA of essence-for-men

| Choice set | Attributes | Profile 1 | Profile 2 | Profile 3 | Profile 4 | No-choice |
|------------|---------------------|-------------------------|------------------|-------------------|-------------------------|-----------|
| #1 | Emphasized function | Restoring wrinkles | Downsizing pores | Moisturizing skin | Downsizing pores | |
| | Price | 90,000 won | 60,000 won | 60,000 won | 90,000 won | |
| | Type of content | Jell type | Lotion type | Jell type | Cream type | |
| | Design of container | Tube style | Tube style | Jar style | Jar style | |
| | | () | () | () | () | () |
| Choice set | Attributes | Profile 1 | Profile 2 | Profile 3 | Profile 4 | No-choice |
| #14 | Emphasized function | Treating acnes or spots | Downsizing pores | Moisturizing skin | Treating acnes or spots | |
| | Price | 60,000 won | 90,000 won | 30,000 won | 90,000 won | |
| | Type of content | Lotion type | Lotion type | Lotion type | Jell type | |
| | Design of container | Pump style | Ampoule style | Ampoule style | Ampoule style | |
| | | () | () | () | () | () |

the quality of data by letting respondents screen out the profiles they would not consider. Part of the choice sets designed for the CBCA of essence is presented in Table 2.4 as an example.

3. CBCA Experiment

3.1. Sampling of respondents

For the CBCA experiment, males who have purchase experience for men’s essence were considered as respondents since the objective of this research was to investigate the most important attribute and the most preferred profile of essence-for-men. A total of 241 male consumers were interviewed in a metropolitan area of Korea. The preferences toward essence-for-men were expected to be different according to the age of consumer; therefore, the quota sampling method based on age brackets was employed. Since young males in their 20s and 30s were the main consumers for men’s cosmetics (Park, 2008), men in their 20s and 30s were recruited more than men over 40. To investigate the characteristics of respondents, the authors classified the respondents based on age and monthly fashion item expenditures. The respondents were divided into three groups with respect to their monthly expenditure: group 1 (less than 100,000 won), group 2 (100,000 won – 200,000 won), and group 3 (more than 200,000 won). Table 3.1 summarizes the frequencies and percentages. The percentages of age brackets of our sample reflect the demographic characteristics of consumers in the men’s cosmetics market. In addition, the results reveal that two thirds of men spend less than 100,000 won per month on fashion items.

Table 3.1. Frequency table of the respondents

| Age brackets | Frequency | % | Monthly expenditures on fashion items | Frequency | % |
|--------------|-----------|-------|---------------------------------------|-----------|-------|
| 20s | 108 | 44.8 | Group 1 | 164 | 68.0 |
| 30s | 87 | 36.1 | Group 2 | 56 | 23.2 |
| Over 40 | 46 | 19.1 | Group 3 | 21 | 8.7 |
| Total | 241 | 100.0 | Total | 241 | 100.0 |

3.2. Data collection

Data were collected via person-to-person interviews in October, 2011. The paper-based survey with paragraph description method was conducted. Questionnaires included 14 choice sets of size 5 as well as the questions about the age and monthly fashion item expenditures of respondents. In addition, four pictures of containers were presented to help the respondents understand the design of the containers. Participants were presented with 14 choice sets and were asked to choose the most preferred profile or 'no-choice' option from each choice set. Finally, questionnaires with the contradictory choices were filtered to improve the quality of data. For instance, in Table 2.3, the pair of profile C and E was included in the 1st and 7th choice sets. If a respondent chose profile C in the 1st set but profile E in the 7th set, then the choice of the respondent was regarded as a contradictory answer.

4. CBCA Analysis

The collected data from each respondent are aggregated across all respondents to estimate the part-worth utility of each level. Based on the part-worth utility estimates, we can assess the contributions of each level, evaluate the relative importance of each attribute, and predict the market shares of competing products. The estimation method in conjoint analysis must be selected in accordance with the type of data. The least squares estimation can be applied to the rating-based conjoint analysis, while the monotone regression method is appropriate for the ranking-based conjoint analysis. In CBCA, the weighted least squares (WLS) method with the multinomial logit transformation can be employed to estimate the part-worth utilities.

4.1. Model

The more interaction terms are included in the conjoint model, the more profiles and choice sets are required. As discussed earlier, larger number of choice sets and profiles will result in an increased burden for respondents; in addition, the reduction in statistical efficiency due to the increase in the number of parameters might not be off-set by the increase in predictive power gained from the interactions. Therefore, the interaction terms should be added only when they result in a significant improvement in the overall fit of the conjoint model. In this research, a linear model with main effects only was fitted at the segmented markets as follows,

$$\mathbf{y} = \beta_0 + \sum_{m=1}^3 \beta_{1m} X_{1m} + \sum_{m=1}^2 \beta_{2m} X_{2m} + \sum_{m=1}^2 \beta_{3m} X_{3m} + \sum_{m=1}^3 \beta_{4m} X_{4m} + \boldsymbol{\varepsilon},$$

where \mathbf{y} denotes the responses which are the multinomial logits, X s are the independent variables expressed by the indicator variable scheme, $\boldsymbol{\beta}$ s are the coefficients, and $\boldsymbol{\varepsilon}$ denotes the error term.

Table 4.1. Test statistic and p -value for test of significance of conjoint models

| Models | Age bracket | | | Expenditure on fashion items | | |
|------------|-------------|----------|----------|------------------------------|----------|----------|
| | 20s | 30s | Over 40 | Group 1 | Group 2 | Group 3 |
| T_0 | 200.35 | 148.12 | 120.28 | 281.96 | 49.65 | 25.00 |
| p -value | < 0.0000 | < 0.0000 | < 0.0000 | < 0.0000 | < 0.0000 | 0.003769 |

Intercept term β_0 was included in the model as suggested by Haaijer *et al.* (2001).

As respondents make a single selection from each choice set, the random variable is defined as C_{ij} ($i = 0, 1, \dots, 4, j = 1, \dots, 14$) that denotes the number of respondents who choose the i^{th} profile in the j^{th} choice set. Then, C_{ij} follow the multinomial distribution. The proportion p_{ij} of respondents who selected each profile or 'no-choice' option has the meaningful information on their preferences, but it is not suitable for the dependent variable of the conjoint model. Thus, the proportion is transformed to logit, which is the natural logarithm of the ratio of the proportion of each profile versus the proportion of 'no-choice' option. Assuming that \hat{p}_{0j} is not equal to zero, the logits are defined: $l_{ij} = \log_e(\hat{p}_{ij}/\hat{p}_{0j})$, $i = 1, \dots, 4, j = 1, \dots, 14$, where $\hat{p}_{ij} = C_{ij}/n$, $\hat{p}_{0j} = C_{0j}/n$, and C_{0j} denotes the number of respondents who select 'no-choice' option. However, if \hat{p}_{0j} is equal to zero, the value $(2n)^{-1}$ can be substituted for \hat{p}_{0j} as suggested by Berkson (1955). In our research, as 4 profiles were assigned to each choice set, the logits in the j^{th} choice set were augmented as a vector, $\mathbf{l}_j = (l_{1j}, \dots, l_{4j})^T$. Then the estimator of variance-covariance matrix of \mathbf{l}_j was obtained as $S_j = (1/n)\{D(1/\hat{p}_{1j}, \dots, 1/\hat{p}_{4j}) + (1/\hat{p}_{0j})H\}$, where H is a 4×4 matrix of all ones, and $D(\cdot)$ denoted a diagonal matrix. The logits of all choices were defined as $\mathbf{y} = (\mathbf{l}_1, \dots, \mathbf{l}_{14})^T$, and the variance-covariance matrix of \mathbf{y} was obtained as $S = D(S_1, \dots, S_{14})$.

4.2. Estimation

The estimates of the part-worth utility and the relative importance of attributes were obtained to evaluate the consumer preferences toward essence-for-men. Since the logits were heteroscedastic and correlated to each other, the WLS method with the weight matrix S^{-1} was applied to estimate the coefficients. The coefficient estimate, $\hat{\beta} = (X^T S^{-1} X)^{-1} X^T S^{-1} \mathbf{y}$ was obtained by using IML/SAS program. Then, part-worth estimates b_{km} of the m^{th} level of k^{th} attribute were calculated from the coefficient estimates: $b_{km} = \hat{\beta}_{km}$ if $m = 1, \dots, h_k$, $b_{kg_k} = -\sum_{m=1}^{h_k} \hat{\beta}_{km}$ if $m = g_k$, where $h_k = g_k - 1$, and g_k denoted the number of levels of the k^{th} attribute. From the part-worth estimates, the relative importance r_k of each attribute was obtained by calculating the ranges of part-worth of each attribute and then percentages of the ranges as follows: $r_k = 100w_k / \sum_{k=1}^4 w_k$, $w_k = \max_m(b_{km}) - \min_m(b_{km})$.

4.3. Test of models

To test the significance of conjoint models, the authors constructed the statistical hypothesis, $H_0 : E\beta = 0$, $H_1 : E\beta \neq 0$, where E is an identity matrix of 11 dimensions with element 0 in the (1, 1)-position. The tests were performed based on the test statistic, $T_0 = (E\hat{\beta})^T \{E(X^T S^{-1} X)^{-1} E^T\}^{-1} (E\hat{\beta})$, that follows the chi-square distribution with 10 degree of freedom. Table 4.1 summarizes the computed test statistic and p -values. The results indicate that all models in this research are significant, yielding test statistics with p -values less than a significance level of 0.01.

Table 5.1. Part-worth and relative importance in markets segmented by age

| Attribute | Level | 20s | | 30s | | Over 40 | |
|---------------------|-------------------------|------------|---------------------|------------|---------------------|------------|---------------------|
| | | Part worth | Relative importance | Part worth | Relative importance | Part worth | Relative importance |
| Emphasized function | Restoring wrinkles | -0.690 | | 0.100 | | -0.794 | |
| | Downsizing pores | 0.003 | 45.41 | 0.045 | 38.20 | 0.154 | 35.37 |
| | Treating acnes or spots | 0.375 | | -0.496 | | -0.403 | |
| | Moisturizing skin | 0.312 | | 0.352 | | 1.043 | |
| Price | 30,000 won | 0.360 | | 0.082 | | -0.510 | |
| | 60,000 won | 0.020 | 31.52 | 0.182 | 20.16 | 0.516 | 19.75 |
| | 90,000 won | -0.380 | | -0.264 | | -0.007 | |
| Type of content | Jell type | 0.020 | | -0.021 | | 0.160 | |
| | Lotion type | 0.049 | 5.07 | 0.190 | 16.23 | -0.288 | 8.64 |
| | Cream type | -0.070 | | -0.170 | | 0.128 | |
| Design of container | Pump style | 0.046 | | 0.271 | | 0.294 | |
| | Tube style | 0.175 | 18.00 | 0.258 | 25.45 | 0.783 | 36.24 |
| | Jar style | -0.247 | | -0.235 | | -1.100 | |
| | Ampoule style | 0.027 | | -0.294 | | 0.024 | |

5. CBCA Results

Through the preliminary analyses, definite differences were revealed between the age brackets as well as between the consumer groups classified by the amount of monthly expenditure on fashion items. Thus, CBCAs were performed on the segmented markets.

5.1. Markets segmented by age

Table 5.1 summarizes the CBCA results in the segmented markets. Some differences are found in the relative importance between age brackets. It is revealed that younger consumers in their 20s and 30s place more importance on the emphasized function but less importance on the type of content. This result indicates that younger male consumers have more in-depth knowledge toward the product and the functions; subsequently, they purchase products to treat specific skin problems. Price is also an important attribute for consumers in their 20s. For male consumers in their 30s, the emphasized function is the most important attribute; however, they differ from the 20s as the design of container is the second most important attribute. Interestingly, for men over 40, the design of the container is the most important attribute. Regardless of age, the type of content is considered the least important attribute.

A remarkable finding was that the part-worth estimates were different according to the age brackets. Among the emphasized functions, consumers in their 20s prefer the function of treating acne or dark spots, while 30s and over 40 prefer the function of moisturizing skin. For price, 20s prefer the cheapest, while 30s and over 40 accept the higher price level. For the type of content, 20s and 30s prefer lotion type, but over 40 prefer jell type. Among the designs of container, 20s and over 40 prefer tube style, while 30s prefer pump style. In summary, consumers in their 20s most prefer the profile that consists of the emphasized function of treating acne or dark spots, lowest price, tube style, and lotion type. Men of 30s most prefer essence of moisturizing skin, pump style, moderate price, and lotion type. Men over 40 most prefer the product of tube style, moisturizing skin, moderate price, and jell type.

Table 5.2. Part-worth and relative importance in markets segmented by expenditure on fashion items

| Attribute | Level | Group 1 | | Group 2 | | Group 3 | |
|---------------------|-------------------------|------------|---------------------|------------|---------------------|------------|---------------------|
| | | Part worth | Relative importance | Part worth | Relative importance | Part worth | Relative importance |
| Emphasized function | Restoring wrinkles | -0.138 | | -0.101 | | -0.067 | |
| | Downsizing pores | -0.097 | 20.79 | 0.038 | 30.00 | 0.093 | 33.19 |
| | Treating acnes or spots | -0.047 | | -0.201 | | -0.348 | |
| | Moisturizing skin | 0.282 | | 0.264 | | 0.322 | |
| Price | 30,000 won | 0.405 | | 0.128 | | -0.141 | |
| | 60,000 won | 0.038 | 42.06 | 0.067 | 20.83 | 0.215 | 17.66 |
| | 90,000 won | -0.443 | | -0.195 | | -0.077 | |
| Type of content | Jell type | 0.024 | | -0.181 | | -0.052 | |
| | Lotion type | 0.094 | 10.51 | 0.152 | 21.50 | 0.031 | 4.14 |
| | Cream type | -0.118 | | 0.030 | | 0.021 | |
| Design of container | Pump style | 0.228 | | 0.159 | | 0.189 | |
| | Tube style | 0.199 | 26.64 | 0.216 | 27.66 | 0.383 | 45.02 |
| | Jar style | -0.310 | | -0.161 | | -0.045 | |
| | Ampoule style | -0.117 | | -0.213 | | -0.526 | |

5.2. Markets segmented by expenditure on fashion items

As the preferences of male consumers were also expected to be different by their expenditure on fashion items, total market was segregated into three groups as defined in Chapter 3.1. Table 5.2 reports the CBCA results in the segmented markets. Some differences are found in the relative importance between consumer groups. As expected, men in Group 1 perceived price as the most important attribute, while Group 2 chose the emphasized function, and Group 3 chose the design of the container. Among the three groups, the group with the most monthly expenditures placed more importance on the emphasized function and type of container in contrast to other groups. This indicates that respondents who spend more on fashion items place more importance on the design aspect; in addition, they place less importance on price compared to the other two groups.

The results indicate that part-worth utilities are also different according to the amount they spend on fashion items. Consumers who spend less than 200,000 won prefer essence that cost less, while men who spend more than 200,000 won accept a higher price. Men of Group 1 prefer pump style, while Group 2 and Group 3 prefer a tube style container design. Regardless of the amount they spend, lotion type and moisturizing function are the most preferred. It is interesting that men prefer a tube or pump style rather than jar or ampoule style. This result implies that male prefer convenience in usage rather than having to open the lid and scoop or pour out the content onto their palms. In summary, consumers in Group 1 most prefer the profile that consists of the lowest price, pump style, function of moisturizing skin, and lotion type. This indicates that they are price sensitive, and pay relatively more attention to the design of the container. Group 2 most prefer essence of moisturizing skin, tube style, lotion type, and the lowest price; however, men in Group 3 most prefer the product of tube style, moisturizing skin, moderate price, and lotion type. This indicates that they are design sensitive, and pay relatively more attention to the emphasized function of essence.

6. Concluding Remarks

This research performed CBCA to analyze male consumer preferences toward cosmetic essence-for-men in segmented markets. The authors adopted this approach since it has definite advantages over traditional conjoint analysis approaches, in that respondents' task of choosing a preferred profile from a choice set closely mimics the actual purchasing behavior of consumers. In addition, CBCA approach is less cumbersome for respondents as it lets them choose one most preferred option from a small group of profiles. The choice sets were organized by modifying a BIBD, which brought desirable characteristics to the choice sets: each profile is assigned at most once in a choice set, each profile is included in the same number of choice sets, and pairs of any two distinct profiles occur together in the same number of choice sets. The last characteristic provides a tool to filter out unreliable respondents.

The key results of these analyses indicate that the relative importance and part-worth utilities are different according to the age brackets as well as the expenditure on fashion items. These study results provide valuable insight for marketers and product developers in the male cosmetics industry. Company strategies for pricing, promotion, product development, and positioning should be altered according to the target market. For example, if a company targets younger male consumers who spend a significant amount on fashion items, their product should be positioned with a focus on emphasized function and design of the container; specifically, the brand should promote how the essence delivers functional benefits such as moisturizing skin and treatment of acnes or pores, and should design the tube style container. Also, when the brand targets fashionable younger men, price and type of content should not be at the center of the positioning or promotional strategies; however, if a company targets older males over 40, they should promote a moisturizing skin function and tube style container. They might also consider promoting the product at a moderate price level. This research has a limitation in that the skin compatibility and actual fragrance of essence could not be included as attributes since the paragraph presentation method was employed instead of the physical product method to describe the essence profiles in the CBCA experiment.

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